

Educational Financing in Developing Countries

**Research Findings and
Contemporary Issues**

IDRC-TS

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Ernesto Schiefelbein



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The idea of the Research Review and Advisory Group (RRAG) undertaking a study relating to research on educational costs and financing first appears in Education research priorities: a collective view (International Development Research Centre, IDRC-068e, 1976). The need for this type of study is of even greater urgency now, especially in developing countries. In January 1980, at a meeting held in Jamaica, the Review Group Executive Committee recommended that such a study be given high priority in the present phase of its work program.

The Group asked that the study focus on available research findings as these relate, or can be related to, contemporary issues of educational financing in developing countries. Thus, this study comprises both a research review and an issues review, the latter especially appropriate given current economic trends and decreasing funds available for educational spending.

Materials were collected with the help of the Review Group networks. Susanne Mowat provided valuable support to all phases of the project. Dr. Joseph P. Farrell of the Ontario Institute for Studies in Education (OISE) assisted the author and selected Manuel Sepúlveda to compile a bibliography in Toronto and to obtain a selection of Educational Resources Information Center (ERIC) materials on the subject. Marfa Clara Grossi and Andrés Schiefelbein helped in similar work in Santiago libraries and in the Resúmenes Analíticos en Educación (RAE) system. Dr. Hans G. Schutze sent relevant materials from the Organization for Economic Cooperation and Development. The Corporación de Promoción Universitaria organized a seminar to discuss financial models and financial mechanisms were examined at another meeting. A progress report circulated among RRAG members; the suggestions of Anil Bordia, Wadi Haddad, Noel McGinn, Robert Myers, Issa Omari, Pote Sapianchai, and Setijadi were especially relevant. Daniel Morales-Gómez obtained a computer printout from the IDRC library in Ottawa and Aida Furtado obtained another from the Unesco-IBEDOC computer files. Lists of references provided by Anil Bordia, for the International Institute for Educational Planning (IIEP), by Ulrich Gehrke, for the Regional Documentation Centre of the German Overseas Institute, and by Ruth Schlette, for the German Foundation for International Development Education and Science Library, helped to identify materials that were analyzed in a second draft. The latter was then circulated among a group of specialists; Daniel Morales-Gómez, Claude Tibi, David Woodward, and Mary Jean Bowman provided comments and suggestions for the preparation of the final version.

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ISSUES IN EDUCATIONAL FINANCING

Developing countries are facing a mounting demand for more and better education. Adequate financing is required to produce greater quality and equality within the educational system and constant pressures are applied to provide additional resources for the sector.

From 1960-1977, the percentage of gross national product (GNP) allocated to education rose by 60% and the rate of increase in developing countries was higher than in developed countries (Table 1). Developed countries devoted, however, a larger fraction of GNP than developing countries to education. In the same period, public expenditure on education increased as a percentage of the national budget. These increments and the pressures for further growth may explain the prevalent view that the basic problem lies in the level of financing.

Table 1. Public expenditure on education as a percentage of gross national product (GNP) and of national budget, 1960-1977.

	% of GNP		% of national budget	
	Developed countries	Developing countries	Developed countries	Developing countries
1960	4.0	2.3	11.3	11.7
1965	5.2	3.0	15.2	13.1
1970	5.7	3.4	16.1	13.8
1974	5.7	3.9	15.6	15.1
1977	6.4	4.1	21.3	16.3

Adapted from: World Bank 1981.

The increase in resources allocated to education has pushed policymakers and administrators to pay more attention to the sources of funding. There are renewed discussions on who should pay for educational services (Coleman 1981). Arguments for public education versus private education go back to the creation of states. Ability to foresee long term results, to obtain relevant information, and to offset market imperfections that would otherwise prevent the poor from making choices in accord with true social costs and benefits are legitimate or at least plausible arguments for public education (Johnson 1973:232). Most recent efforts in developing countries have been carried out by the state. Although the percentages in Table 1 conceal wide variations, they suggest that further increments in public expenditure on education could require a reduction in resources for the competing sectors in the near future unless the government increases its share of the GNP. If the share of GNP or public purse allocated to education is already high, then additional funds have to be sought from private sources.

Greater efficiency in reaching stated goals reduces the demand for more funds. Certain groups contend that the goals should be changed given the discriminations associated with existing allocations (against rural or disadvantaged populations, elementary education, women, or minorities). For them, efficiency means new goals, that is, using available resources to achieve better ends. Some groups are interested in the redistributive impact of public expenditure, others are engaged in comparing the efficiency of the public education system with that of private initiatives. Such

consideration of educational institutions and their proper role is partially reflected in the growing number of educational reforms being proposed throughout the world.

The search for more efficient educational technologies and attempts to improve equalization of opportunities have resulted in a growing awareness of the use of financial mechanisms as policy tools. Many recent inquiries have focused on investment choices (Simmons 1974). Discussion is constrained, however, because financial decisions have complex effects and because the relationships and effective levels of operations of educational institutions are the subject of multiple assumptions. Financing strategies may affect not only who pays and who receives education, but the factors used in the process and the efficiency of the operation.

Education and finance are concepts used here in a wide sense. The first includes formal, nonformal, and eventually informal education. Finance includes the sources and management of educational finance as well as the process of spending and using funds. Operational definitions of both concepts are presented in later sections of this study. In the following pages, four issues relating to educational financing are examined in greater detail: level of financing, sources of funding, efficiency, and financial mechanisms. Five lines of solutions are presented in the second chapter. Available research is identified and the advantages and disadvantages of specific mechanisms are discussed in the following chapters. The last chapter of this study points to research gaps in educational financing.

The Explosive Demand for Education

Several factors seem to reinforce each other to generate a sustained demand for more and better education. Although each country has its own particular pattern, similar factors are usually relevant for building such a demand. These factors give us a better understanding of the pressures for more financing.

As a general rule, persons with more education (all other factors being similar) obtain higher levels of income (Blaug 1973), especially over time (Fägerlind 1975). Other factors, such as family economic background or personal characteristics, may affect the relation and be the real causes of larger salaries. Nevertheless, the relation between education and income holds and people are well aware of it.

Interest in education heightens with population explosions - especially when they are concentrated in urban areas, exposures to radio and to TV, minimal levels of education that allow householders to obtain written information, acceptance of universal primary education as a goal to be achieved, and rises in the school leaving age (Anderson 1971; Arriaga 1972; Zymelman 1973). Demands for nutrition and health at the school level are other factors although they can be included as health concerns (Pandit 1969).

The interest of individuals in more education was matched in the 1960s by the interest of governments, the latter sparked by political expediency (responding to population demands) and by scholarly reports (responding to Schultz's, Denison's, and Griliches's evidence that education makes an important contribution to economic growth) (Bowman 1969). At the same time, international organizations convinced developing countries of the need of establishing universal free and compulsory education by the 1980s and of devoting a larger fraction of GNP to education. Comparative statistics on educational achievement and resources allocated to the sector may have had in impact on national pride and may have contributed to raising educational standards. An effort may also have been made to compensate previous underinvestment in human resources (Chenery and Syrquin 1978:6).

New generations have higher levels of education but job opportunities are lagging. The minimal level of education required for entry to a traditional job has been rising steadily. Because individuals want an educational edge over others who are competing for scarcer jobs, the demand for education has grown. Thus, employment seems to accelerate the demand for schooling at all levels. Economic conditions are linked with cultural values for channeling people to the educational system as a means of fulfilling their aspirations. In this context, it is impossible to provide enough education (and financing). As soon as a target is achieved, a new one must be set

up. Demands for more resources escalate because each new level has higher costs per student. Now that demand is reaching the university level in many countries, the corresponding unit costs may be 10-20 times those of the primary level. Therefore, additional demand has a multiplicative effect on financing.

Several other factors may have a strong impact on financing. The greater the acceptance of education as a right, the more expensive it becomes as the right is extended to people who live in the countryside or in isolated areas and people who are disabled. In the USA, certain school districts pay up to 45% more to provide the same amounts and quality of education as other districts in the same state. In some developing countries, teachers working in isolated areas can earn bonuses of up to 100% of their regular salary. More countries may implement similar benefits in the near future. If teachers' salaries rise according to overall increments in productivity, the impact on financing may be moderate. If teachers are unionized and obtain a powerful bargaining position, however, wages may be additionally increased (except in those countries where teachers have good salaries). Pressures for more resources for education may also be related to the expansion of the concept of education itself. New types of informal and non-formal education are seeking subsidies and the demand for lifelong education is increasing. All these pressures combine to make the educational manager seek guidelines as to how much society should spend on improving the instruction, training, and skills of its members.

In some countries, resources for certain types of education could be limited but, in a democratic society, it is hard to constrain the demand for education. Increasing levels of educated unemployment may facilitate the process of making politically difficult decisions, however. In making decisions about the level of financing, it is necessary to monitor demand variables (Fredriksen 1981:14); otherwise the financial aspects would run out of control. Reported attempts to establish control on entry into secondary education in Tanzania and Senegal are not very promising (Ta Ngoc Chau and Caillods 1975; 1976). On the other hand, reduction of enrollments in Tanzanian secondary and higher education would have hurt the manpower required for economic and social development (Ta Ngoc Chau and Caillods 1975:125).

In countries with low levels of unemployment, "earnings foregone at the upper secondary level may be a far more effective financial barrier for working class pupils than fees in higher education" (Woodhall 1978:28). This could also be the case in countries with higher levels of unemployment (Heyneman 1979).

In the long run, there may be a built-in control of educational expenses through reduction in growth. Cochrane (1979:141) states that:

Both theoretical and empirical evidence indicate that education in the poorest regions may increase the ability to conceive and carry conceptions to successful live births. In the short run, this increase would tend to increase actual fertility. In the long run, however, the positive initial effect of education on fertility may become negative.

This final negative effect on the level of financing may take 10-20 years to be realized. It is therefore necessary to look for greater efficiency (lower unit costs), to design new ways of achieving educational objectives (innovation), or to find new sources of financing.

Growth of Government Activity in Education

Social pressures have forced central authorities to effect a quick and large-scale transfer of resources from other sectors to education. Private funding for education has frequently lagged because public education is free and owners of the resources have seldom been "bribed" to provide funds for education. There is a "law of ever-increasing state activity" given that pressures from beneficiaries and the bureaucracies are immense. Several elements operating in the educational system suggest that such a law could be working in many countries but there are exceptions (Table 2). Longitudinal studies on the shifts of the balance of power among local and central governments have not been undertaken as yet in developing countries (for the United Kingdom, see Byrne 1974:307).

Table 2. Ratios among sources of educational expenditures.

Ratio of Ministry of Education expenditures to total educational expenditures		Ratio of educational expenditures of other ministries to Ministry of Education expenditures		Ratio of private educational expenditures to Ministry of Education expenditures	
Average	0.52	Average	0.34	Average	0.45
Median	0.57	Median	0.14	Median	0.36
Uganda	0.84	Thailand	2.17	Brazil	1.11
Turkey	0.70	Tanzania	0.70	Indonesia	1.05
Chile	0.67	Ethiopia	0.54	Japan	0.93
Venezuela	0.66	Indonesia	0.49	Thailand	0.81
Fiji Islands	0.65	Turkey	0.29	South Korea	0.62
Togo	0.64	Brazil	0.24	Fiji Islands	0.53
Kenya	0.58	Colombia	0.23	Colombia	0.51
Argentina	0.58	Chile	0.14	Togo	0.39
Tanzania	0.56	Venezuela	0.13	Chile	0.32
Korea	0.55	Togo	0.12	Kenya	0.25
Ethiopia	0.54	Japan	0.12	Ethiopia	0.21
Colombia	0.41	Kenya	0.11	Venezuela	0.13
Japan	0.25	Uganda	0.05	Turkey	0.07
Indonesia	0.25	Argentina	0.005	Tanzania	0.07
Thailand	0.24	Fiji Islands	-a	Uganda	0.05
Brazil	0.19	South Korea	-a	Argentina	0.04

Adapted from: Zymelman 1973:3-8.

a. Insignificant.

Government-provided education was welcomed for equalizing access to education and for considering educational benefits that cannot enter into a private firm's calculations because they cannot be appropriated by each firm (what the economists call external economies). Education produces positive externalities of both an economic and noneconomic nature (Eckstein 1964:10; Katzman 1973:373; Zymelman 1973:19). Public education has hurried, however, the differences between financing of and provision for education: "to show that many people cannot afford to educate their children beyond the statutory leaving age at best established a case for a cash grant by the state, an income tax rebate or a personal loan from the public authorities, but has absolutely nothing to do with the issue of private versus public ownership of schools..." (Blaug 1967:33).

State activity in education reflects the function of government in the whole society. Educational sovereignty rests in the hands of the leaders in a centrally controlled society and is closely attuned to consumers' preferences in a more democratic society. In both cases, government can intervene with legal controls, inspection, licensing, or laws regulating curricula and salaries (Zymelman 1973:20). The increasing role of the state in developing countries probably reflects their more monolithic organization (Riggs 1964).

Pressures for increasing public education are applied by different sources. In many countries, education is a more efficient communication channel than are those provided by the political parties, the army, the mass media, or the church. New schools can be offered to local groups in political campaigns. Teaching jobs can also be used to extend political favours and to secure the loyalty of officials. At the same time, the expansion of teaching staffs can provide jobs for the growing number of yearly graduates. Public and compulsory education may reflect, in some cases, the strong influences of vested interests (Riggs 1964). In some countries, the decentralization of educational activities has created factions within powerful national teachers' unions.

Since ancient times, thinkers have tried to determine the proper scope of government activity in education. Advocates of public education have argued that

schools are natural monopolies for scattered populations and consumers have little power in such markets; that market imperfections prevent the poor from making rational choices; that students are not always qualified to judge a present or future course; or that education contributes to a sense of social cohesion in new countries or in countries with heavy immigration. Other arguments have also been used to support public education (Kirst 1981:165). Technological inefficiency, centralization of power, lack of responsiveness to client demands, and lack of innovativeness are certain drawbacks that suggest the need for more competitive markets to provide education (Katzman 1973; Zymelman 1973).

When additional public funding is too difficult to obtain, when fiscal crisis becomes severe, or when changes in the mode of financing or providing education are contemplated, new sources of funding are explored (Callaway and Musone 1968; Ter Weele 1972; Olembo 1974; Scovill 1975; Afzal 1979), as are mechanisms for transfer of the final payment to the student himself (Windham 1974; Kimball 1974).

In countries with multi-source systems of financing education, for example India, "the burden of financing has been shifting to higher tiers of government. In fact, the management of educational finance has become a significant function of the central government" (Pandit 1976:7). This shift is partially explained by the state's control of the most elastic sources of revenue, such as income taxes; hence there is a chronic gap between resources and expenditure commitments at the local level (Pandit 1976:17). In countries with central financing, decentralization can be implemented as a strategy to limit the expansion of central government expenses in education.

Growing Concern for Performance

The larger the amount of resources that are allocated to education, the greater the number of questions that are asked about alternative ways of using these resources for more beneficial purposes. Economists contribute to this trend with their own questions flowing from marginal analysis and optimization. More and better statistics point to wide differences in recurrent costs for the various levels, regions, or ethnic groups within the educational system in each country and therefore to the system's performance (Tibi 1980).

Table 3 shows wide differences among countries in the distribution of expenditures by level of education. Unfortunately, studies on ideal distributions for alternative sets of educational objectives and levels of educational development are not available. In fact, evaluation of specific financial allocations in educational systems involves subjective preferences as well as rational appraisal. The criteria include basic philosophic issues - freedom, equity, social cohesion, self-realization, welfare, efficiency - that cannot be wholly agreed upon.

Close studies of the great difference between unit costs at the primary and university levels attribute the difference to teachers' salaries and their workload. Few comparisons have dealt, however, with the effects of these factors on "costs per graduates of similar achievement" (Avalos and Haddad 1979). Cost differences and their determinants may reflect either inefficiencies in the utilization of resources or disparities in the quality of education and school results (Tibi 1980:8).

Each member of society must decide which combination of features he likes best in an educational system, yet must adapt to the one that prevails. If he wants to change it, he has to resort to political action or convince the authorities in power. Certain researchers have attempted to use rates of return results to increase financing for certain types of education, mainly primary education, but several problems have cast doubts on their findings (Zymelman 1973:215-221). Some have shown that repetition and dropout leads to wastage of resources (Dominguez 1980; Schiefelbein and Grossi 1980). Others interested in the effects of educational expenditures on income distribution have studied whether educational spending favours the poor, the middle class, or the rich (Jallade 1974; Schiefelbein and Clavel 1976; Fields 1975; 1980). Some believe that state accountability systems should be established for the education sector but efforts to implement a program planning and budgeting system in several developing countries have had little success because it is hard to measure results.

Table 3. Percentage distribution of expenditures for education by level of education, 1975.

Countries grouped by gross national product per capita	Number of countries	Primary			Secondary			Higher		
		Average	Median	Range	Average	Median	Range	Average	Median	Range
Low (less than \$265)	23	55.5	49.7	25.9-71.1	29.1	32.5	19.6-58.8	15.4	16.0	1.5-32.0
Lower middle (\$266-520)	16	39.3	37.3	23.5-60.5	38.0	34.7	8.2-59.6	22.7	26.7	3.4-54.5
Intermediate middle (\$521-1075)	19	39.9	39.7	26.4-61.2	23.0	30.1	7.6-49.3	37.1	21.6	7.9-56.8
Upper middle (\$1076-2500)	7	39.9	41.3	32.0-54.9	27.1	28.9	14.0-35.2	32.9	27.3	14.8-46.2
Total all developing countries	65	41.1	43.3	23.5-71.1	27.0	30.6	7.6-59.6	31.8	21.6	1.5-56.8
OECD ^a countries	17	33.3	35.9	22.7-58.7	34.9	38.7	21.0-58.6	31.8	24.1	9.7-41.9

Source: World Bank 1980:122-123.
a. Organization for Economic Cooperation and Development.

The United States Supreme Court decisions on the right to equality in public education are now being applied to new fields such as equality for the disabled (Levin 1973; Silard 1973; Pincus 1977). Yet, there are claims for more diversity and for some discretionary allocation of resources in terms of local community needs and preferences (Foster 1975; Jordan and Hanes 1976). American experiences will probably have an impact on other countries in the future and results should be closely monitored.

Financing is directly related to efficiency because the more efficient the educational system the less funds will be required to fulfill its goals; more can therefore be accomplished with a budget. Efficiency is weighed by the benefits derived and these depend on the basic philosophic issues mentioned above and on the ability to assess them. Basic tools, such as cost-benefit or cost-effectiveness analysis, may have limitations in encompassing most of the benefits and some of the costs involved, so it is difficult to make generalizations on the effects of efficiency in financing. In fact, most studies deal with very specific situations. Research results on this topic are reviewed in Chapter 5.

There are some indications that traditional objectives may be or are being achieved in a more efficient way. In many countries now, rural teachers are working more than the usual 3 days/weeks, repetition is being reduced, schools are growing in size, and class sizes are increasing. Two cases in point are Indonesia (Tobing and Johnstone 1980:47) and the Latin American countries. These trends are also associated with lower costs per student. The impact on the quality of education must still be assessed, however. Figure 1 suggests that less developed countries tend to have lower costs per university student the larger proportion of students enrolled in universities. In certain developing countries, teachers are earning 10-20 times the value of GNP per capita (Unesco 1981:44); however, these ratios will probably decrease in time to those observed in developed countries (2-3 times).

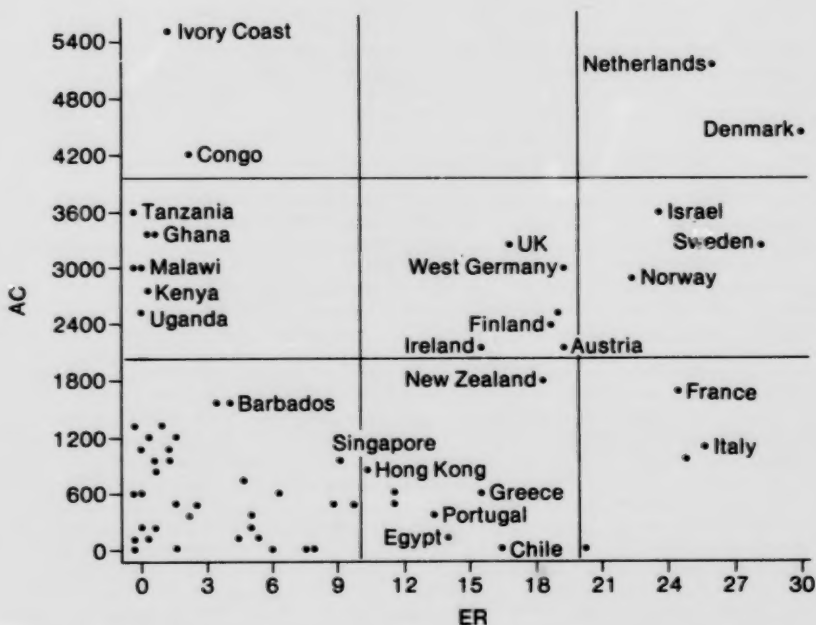


Figure 1. Average cost/student (AC) and enrollment ratio (ER) in developed and developing countries. Source: Psacharopoulos 1979:38.

Greater efficiency is anticipated in the near future. The savings generated by this trend should be compared with the changes in objectives and coverage discussed above. Because there is a long time lag before educational expenditures yield their output, the return to education may be different. Research results on unit costs are discussed in a later section on evaluation of resources.

Financial Mechanisms as Policy Instruments

Financing was considered for some time as the only source of educational support. More funds were required "to improve and expand educational facilities...to permit absorption of the rapidly growing school population while maintaining or raising the standard of education" (Higgins 1966:3). Comparisons over time or among countries are still made to establish how much money is available for particular elements of the educational system, but there is now a new concern for financial mechanisms as policy instruments (Noah and Sherman 1979:5). The selection of mechanisms may affect the quality and quantity of education as well as the distributive effects, rated innovations, efficiency, and sources of support for education.

Social justice and better educational quality may well conflict under certain financial mechanisms. If students with higher scores are also rewarded with scholarships and better schooling, a country may end up supporting the educational progress of higher-income families (Woodhall 1978:5). Mechanisms tend to affect different ends of social life in different levels because social goals are somewhat interdependent and can conflict with one another.

The sources of financing (i.e., general taxes; earmarked taxes; property, salary, and sales taxes; family payments of fees; donations; contributions to firms; local community contributions in work; commodities or money or deferred contributions resulting from loans or taxes) and the methods of fund allocation (i.e., vouchers or cash grants to parents or local schools; income tax rebates; drawing rights; public schools; grants and scholarships; loans; subsidies based on attendance or teachers' salaries) have important implications for the outcomes of educational systems. The two - sources and allocations - are interdependent and should be consistent with sought goals so that the proper mechanisms are selected in a given situation. This is especially important in countries where the fiscal crisis has become severe and possible restrictions on school programs or tendencies to increase fees or tuition costs may create hardship for those most in need of public schools. Woodhall (1973:49) reports that:

Governments can influence the price of education by a wide variety of means - direct and indirect. Decisions about the supply of places, the allocation of resources between different levels of education, the choice between different methods of finance and student aid, or between different methods of selection, even the determination of levels of pay in the public sector, all help to determine the price of education....

If financial mechanisms for education are to achieve their potential as a means to serve policy ends, they need to be better understood (Noah and Sherman 1979:5). Chapter 2 examines some complexities arising from the use of financial mechanisms as policy instruments to provide a suitable framework for analyzing the problem of educational financing.

PROPOSALS AND JUDGMENTS

Analysis of a few concrete proposals is one way of selecting research topics that should be discussed. Fortunately, enough material is available because any article dealing with financial issues implicitly contains a proposal. Each author has a favourite shibboleth that is sometimes suggested for all countries, although it may be based on some specific assumptions. An attempt is made to clarify these suppositions and to discuss how reality impinges on the operation of the proposed mechanisms.

Equalization Through Taxes?

Some economists suggest equalization of resource levels for education rather than equalization of service levels. This proposal can even be applied to people below some socially-accepted poverty line by establishing a "negative income tax", i.e. income subventions from public funds. This proposal presents a technical problem because the schedules of tax rates for the poor have "disincentive effects of a 100% marginal tax rate on the earnings of the still-poor" (Johnson 1973:232). Even if this problem is resolved, there is another more basic one: how efficient are internal revenue systems? In most developing countries, tax structures are handicapped by both legal and administrative problems; there may even be proposals for replacing income tax by a value added tax. Basic conflicts and constraints surrounding tax policy imply the need for important tax reforms or improvements in the application of the present tax system before the system can be used for equalization of educational opportunities (Abdel Wahab 1972; Tanzi 1978:238; Davis 1980:177).

By the same token, it is difficult to apply differential fees according to family income levels. While the income of those household heads receiving a salary is easily established, there are serious problems in establishing the incomes of self-employed people, whether professional or not, or of high level managers. Even in developed countries, a careful review and changes must be made to as many as 25% of students' Financial Needs Reports before aid based on these needs is offered.

Free Education Benefits the Poor? The Rich?

Learning experiences must be related to the cultural environment of children. This is a difficult objective to reach with a common national curriculum when there are wide differences among social groups. For instance, if curricula are suited to middle or upper classes in Latin America, children from poor families will probably repeat grades 1 and 2 several times before dropping out. Class structure is less marked in Africa and Oceania (Foster 1975:388), but urbanization is creating similar differences in some African countries (Kinyanjui 1979).

On the other hand, rich families frequently send their children to private schools, paying fees for tuition and other purposes (in some countries, there is free or almost free private education that is similar or worse than public education). Higher income groups will, therefore, all else being equal, receive relatively smaller subsidies than similar groups in countries where there is no private education (Jallade 1974:19). If children of wealthy families transfer to public education at the secondary and university levels, they often have an extra advantage because they were helped to progress without repetition (they attended better primary schools, got additional private tutoring, used better language at home, possessed textbooks and magazines, received better health care, and did not fret over transportation problems), and are enrolled in larger numbers in the advanced levels of the educational system (Fields 1975:247). Of course, the advantages for influential families are larger in some countries (especially where government controls the private system) when they can send their children to good public schools and children of poor families have to go to more expensive and less efficient private schools.

When fees are charged in public school or the private sector is partly financed through a grants-in-aid system, a similar problem arises. Callaway and Musone (1968:99) point out that: "Because fees charged...are beyond the means of most families, well-off parents have an extra advantage. Because they are able to afford the fees for their children, they thereby benefit from counterpart government contribution."

Discriminal distribution on principles not directly related to assessed needs overrides other factors and increases inequality (Byrne 1974:309). The more selective the system is, the greater are the discriminatory effects. Those who gain the most are those who consume the most free (or subsidized) public education and ordinary taxation procedures cannot be used to redistribute income from these consumers.

Another problem is providing sufficient numbers of school places at each level. Beyond compulsory education, free tuition does not constitute a good criterion for investment because the state or philanthropists make decisions about new places using other criteria. Underinvestment is more likely to occur if political emotions are not strongly aroused (there may be a case for fees if desired development is being slowed by the requirements of central finance). If all children of a given school age are attending school in similar grades, redistributive effects are small. Discriminatory effects will only depend on repetition and promotion rates.

On the other hand, given scarce resources, Foster (1975:382) has suggested that "... if education is to be rationed then it must be rationed through price", although the author added that:

...such a policy will not work, however, and may indeed be politically non-viable unless several correlative measures are also accepted. First, the scale of primary school fees must not be made uniform for the whole country. In poorer regions or districts where demand for education is low, fees can be dispensed with...Second, even if the scale of fees is to be variable, then the level at which they are to be pegged must not be solely a matter of decision by central government but also by local communities themselves....

Foster recognizes that such a policy can be labeled elitist in its intent.

With respect to the analysis of "who should pay for the educational effort", in developed countries the proportion of tuition fees comprising university income is relatively low. Table 4 shows not only that tuition fees are low, but also that a relatively high proportion of students is receiving help from the government.

Table 4. Comparison of participation and financing of higher education in selected developed countries, around 1974, in percentages.

Country	Proportion of relevant age group entering higher education	Tuition fees as proportion of university income	Proportion of students receiving governmental aid
Australia	35.2	0 ^a	58 ^c 76 ^d
Canada	33.1	10	25
Denmark	36.4	0	50
Finland	24.6	0	50
France	31.4	0	15
Germany	24.2	0	45
Japan	36.3	4 ^a 42 ^b	10 ^c 4-24 ^d
Netherlands	21.0	10 ^w	38 ^c 50 ^d
Norway	40.1	0	69
Sweden	37.6	0	70
United Kingdom	21.8	(increased 1977-1978)	90
United States	42.0	12 ^a 33 ^b	25

Adapted from: Woodhall 1978:37.

a-d: a, public; b, private; c, university; d, other.

Financing for Efficiency

In a natural monopoly, such as education, where it is difficult to introduce effective legal controls and consumers have little power, a centralized administration operating with some public control, as do all civil services, may prove to be a good solution. On the other hand, such a system tends to reflect the administrators' tastes rather than the consumers' tastes.

Increased state acceptance of financial responsibility in education is sometimes labeled as administrative overburden of bureaucracy, whereas private education is often accused of "selling" diplomas without regard for satisfactory academic work or of "polluting" the rest of the public system by excluding those students with learning or behavioural problems. The Coleman Report dispelled some previous beliefs (conventional wisdom) on differences in American schools' performance. Research in developing countries has also shown that little difference in achievement is observed between public and private schools once the socioeconomic level of families is controlled, although several school variables have significant effects - textbooks, peer groups, and length of school year (Simmons 1980:137).

Private education tends to be concentrated in densely populated urban areas. Sparsely populated rural areas increase the cost of educational services as well as that of transportation or lodging. Extreme climates, risky zones in shantytowns or red-light districts, high cost-of-living cities, isolated mountain and jungle areas, or students with special needs affect average levels of efficiency and raise costs per student. How do market forces cope with these problems or state-aid schools adjust to such conditions? Dorfman (1967:142) maintains that in the case of education:

...private benefits are less than social benefits in the sense that third parties are willing to contribute to promote the consumption of the commodity...Free public education fills this need: it permits realization of the external benefits of education...Compulsory education goes even further: it provides the external benefits even at the cost of diminishing the welfare of the consumers directly involved...Such nonmarket devices can make an economy more responsive to consumer sovereignty than can undeviating reliance on the price system.

Friedman argues that the creation of a private market produces technological efficiency because of the profit motive: "Greater efficiency would translate into either lower costs or greater quality for the consumer, while inefficient schools would succumb" (Katzman 1973:380). Others contest that the overriding objective of education is to produce a well-adjusted, responsible, and active citizen.

Several questions must be considered before a rational decision is made in this regard. How efficient are the state norms and controls? How are consumers made aware of the quality of educational institutions? What are the social problems or solutions to "educational pollution"? What are the differences in graduates from public or private schools that are attributable to each type of school? How can higher costs in areas with special problems for educating students be subsidized? What would be the probable increments in technology generated by the profit motive? A careful experimentation with longterm follow-up (tracer studies) may provide some practical suggestions. In the meantime, the final decision is reached in a subjective way: one bets on each alternative, on its possible by-products, and on its side effects.

Financing for Equity

According to Kurland (1980:165), "all individuals should have equal access to educational opportunity - a criterion difficult to apply, even in traditional education, but made even more difficult from a lifelong education perspective because of the increased importance of the time dimension." The basic assumption that there is some advantage in becoming educated is supported by the high relationship between education and income detected in developing countries (Blaug, 1973). Zymelman (1973:23-24) has identified three different approaches to financing:

The proponents of government financing and government provision always believed that providing equal access was a social responsibility... Proponents of the market approach, free in both financing and provision, obviously differ. They agree in principle on the need for everyone's equality of purchasing power, but they oppose government financing and provision because they say it does not do what the government says it does... Proponents of a third strategy - government financing and market provision - believe that equalization of purchasing power can best be obtained with their approach... Government can give subsidies to individuals so that the poor have as much purchasing power as the rich, but are free to use it as they wish.

The number of alternatives increases, according to Noah and Sherman (1979:43), "if equalization mechanisms are defined at the local community or at the individual level."

Some countries choose to achieve equalization in education through central regulations and financing; others have moderate regulations and financing is generated at the local level (Table 5). Many social aspects have to be considered when proposing new ways of promoting equality in education. Changes in the present arrangements would probably negatively affect groups that now benefit from the system.

Several mechanisms have been proposed for equalizing purchasing power: vouchers redeemable for a specified maximum sum per child if spent on approved education is most frequently mentioned. The government pays the value of the vouchers and insures minimum standards of equality. Two types of vouchers are parent-supplemented vouchers and maximum-expenditure vouchers with no parental supplement. A third type would be vouchers inversely related to income (Katzman 1973:382; Zymelman 1973:152; Woodhall 1978:13). Categorical or no-strings-attached grants have been used at the local level. In all types, the financial burden is supported by the state.

Proponents of a free market approach suggest that all costs be paid by the students or their parents, if they are able and willing to do so. Windham (1974:3) states: "it is society's responsibility to facilitate the student's acceptance of this financial obligation by establishing... a loan system so that the student is able to pay for his education during his higher earning years after graduation." Under the system, the government actually finances education until the loans are recovered and a revolving fund is established in the long run. If the loans apply to tuition and maintenance, there can be increased demands for education and more pressures on the public budget (Blaug 1973:52). Foster (1975:391) suggests that the loan system "in the context of many of the new nations is difficult to administer."

In developing countries, pressures are now exerted for educating able students and it will be some time before the need for additional resources for children with physical and emotional handicaps, economic disadvantages, or special educational requirements is recognized. Suitable modifications should be introduced in each of the proposed systems to finance special educational needs (Noah and Sherman 1979:56).

Financing for Diversity

Another value that should be promoted, especially in terms of lifelong education, is diversity. Individual and social needs being diverse, "a responsive system must also be diverse allowing for wide variation in educational purposes, content, methods and places and times of offering" (Kurland 1980:166). Even if common standards are sought, they require different approaches to fit individual differences (Bloom 1976:x). According to Katzman (1973:386),

...there are tens of thousands of local educational authorities, each serving a clientele with unique class and ethnic characteristics, hence differing attitudes toward schooling. These differences in parental characteristics notwithstanding, there is relatively little variety in the way in which schools are run. Variety might be introduced if a new set of entrepreneurs entered the market for schooling, ignorant of the norms of the professional subculture and mentally prepared to consider alternatives to the best professional practice.

Table 5. Educational financing in 10 developed countries.

Country	Central regulation ^a	Level of central finance	Degree of local autonomy	Level of non-local funding	Type of funding	Nongovernmental schooling
Australia	High	High (> 90%)	High	High (> 80%)	Categorical	Moderate (c. 20%)
Canada						
Ontario	Low-moderate	Moderate (> 60%)	High	Moderate (> 60%)	Noncategorical	Moderate (c. 20%)
England	Low-moderate	Moderate (> 60%)	High	Moderate (> 60%)	Noncategorical	Moderate (c. 20%)
Germany	High	Moderate (> 60%)	Low	Moderate (> 60%)	Categorical	Low (< 10%)
Italy	High	Moderate (> 60%)	Low	High (> 80%)	Categorical	Low (< 10%)
Netherlands	Low-moderate	High (> 90%)	Moderate	High (> 80%)	Categorical	High (> 65%)
Norway	High	Low (< 60%)	Moderate	Low (< 60%)	Categorical	Low (< 10%)
Sweden	High	Low (< 60%)	Low	Low (< 60%)	Categorical	Low (< 10%)
United States						
California	Low-moderate	Low (< 60%)	High	Low (< 60%)	Noncategorical	Low (< 10%)
Florida	Low-moderate	Moderate (> 60%)	High	Moderate (> 60%)	Noncategorical	Low (< 10%)
Yugoslavia	Low-moderate	Low (< 60%)	High	Low (< 60%)	Noncategorical	Low (< 10%) ^b

Adapted from: Noah and Sherman 1979:49, 57, 58, 63.

a. The term "central" refers to the national government. In Canada, Australia, the United States, and Yugoslavia, it refers to the provinces, states, and republics, respectively.

b. No nongovernment sector.

There is a fundamental need for more competitive markets in the production of educational services. Today, a more pluralistic concept of education based on commonalities of interests, values, or educational preferences is being opposed to the rigid assignment of pupils strictly by residence (Coleman 1981).

The existence of reliable and valid assessment systems can however constitute a basis for intelligent choices that can offset market imperfections. Noah and Sherman (1979:61-62) state that:

Within public primary school systems, economically-, religiously-, racially- and class-segregated schools may imply important elements of choice for members of the dominant group, and restriction of choice for members of the subordinate group. Thus, although much of this diversity of provision may not really imply any widening of parental choice over the type of schooling to be afforded children, some of it may...The Dutch system of financing primary education is one of the most advanced in this area. In the Netherlands, parents not only have the right to provide their children with the education that is in line with their way of life, their philosophy, or the educational methods they prefer, but they also have the right to receive public support...

The Search for New Sources

In certain cases, new sources are proposed for coping with new demands for more and better education. Local funding has been mentioned above. Food allocations to teachers and manpower contributions to school construction and maintenance are two other mechanisms that have been successful in several countries. Nonetheless, most rural families still have problems in entering the money market.

Income taxes have been earmarked in several countries to provide the skills required by the economy, mainly through on-the-job training. Many training institutions are using this source although it can have a negative effect on the labour demand. In developed countries, property taxes are sometimes earmarked for education but they can also lead to forms of discrimination. Export goods are taxed in some countries and part of the revenues are allocated to education on the assumption that higher levels of education may replace nonrenewable resources in the future.

Many studies describe mechanisms for obtaining additional resources and their advantages and disadvantages with respect to the current situation. Such reports are usually restricted. Several UNDP (United Nations Development Programme) or Unesco reports that could not be reviewed for the present study fall within this category.

Proposals are usually generated in a specific context and consider relevant factors constraining that context. When the proposals are generalized to other settings, however, too many assumptions can be violated. Efficiency of the tax system, determinants of school achievement, sex discrimination in the educational and labour sectors, salary structure, costs per student, student loan systems, public and private school quality, types of private schools, educational and labour market data, assessment of educational outcomes, redistributive effects of educational expenditures, types of vouchers used, and requirements to establish new schools are important factors that should be considered when evaluating any given proposal (Schiefelbein 1980).

Most proposals are presented as conditional statements: in many cases there are few or no objective bases for objective judgement of specific situations. Katzman (1973:388) maintains that:

The major questions are whether educators can be innovative in a meaningful way, whether the self-segregation of student by ability, social class, and ethnicity will be greater than at present...These questions can be solved only by experimentation with longterm followup. The practical problem is finding areas of education in which experimentation on the (financial) plan is feasible without stepping on too many vested toes.

Available research on educational financing may help in designing better experiments. This report will now focus on these research findings.

IDENTIFYING AVAILABLE RESEARCH

Education, research, and financing can be misleading concepts especially in communications between people from developed and developing countries. Operational definitions are presented below to avoid misinterpretation and the method used to identify research in developing countries is described.

Education, Research, and Financing

The learning process involves teachers and students and both have an influence on educational financing. Personal characteristics like IQ or motivation affect efficiency and, therefore, financing. Because there was no available research on the financial impacts from the learner's point of view, a definition of education that includes only teaching has been selected. Simmons (1973:3) defines education as:

...what is taught in school and school-related experiences like sports teams and theatre groups. Education without and adjective refers to learning that can take place outside the school as well as inside. Nonformal education refers to organized educational activities that occur outside the school, like adult literacy courses and agricultural extension services. Learning that is not organized can be termed informal education and includes all forms of nonschool experience.

This definition widens the concept of education beyond mere schooling and includes incidental forms of learning that still prevail today in vast areas and that are the only type of education received by millions of people (Faure et al. 1972:5).

The empiric tradition has sometimes been considered the dominant accepted view in educational research. In that limited view, research tends to be objective: two persons with the same element should arrive at identical conclusions. If research is to help to solve educational problems, however, it must be broadly defined to include "any activities that lead to a better understanding of education problems and that produce findings relevant to policy formulation...Research, then, includes any activity involving information-gathering and analysis from the simplest to the most sophisticated operation" (IDRC 1976:5). Conventional studies which are often derived from social science theories are more concerned with understanding a system than with modifying it (Bloom 1979; Davis 1980:374), yet legal studies or assessments of willingness of people to change traditional procedures are likely to be as valuable to decision-makers. Studies that involve data collection (measurements, observations, statements) and analysis to produce findings whose accuracy can be examined by other research workers are included in the present study to add to our knowledge and understanding of educational financing. The two definitions of research used have increased the number of research reports examined: references would have been reduced by half with a more traditional definition of education and research.

Financing of education, in policy terms, should take into account comparisons over time or among countries; effects of changes in mechanisms or in beneficiaries (adults, pre-school, or lifelong education); modifications in factors affecting demand for education (population, certificates, or unemployment); introduction of more efficient technologies; use of new sources; changes in prices that affect costs per student; and objective indicators of the efficient use of funds. A schematic view of educational financing (Fig. 2) illustrates the possible impact of these different aspects.

The Study Design

The study provided an opportunity to test a new approach for conducting inter-country state of the art studies through networks in developed and developing countries.

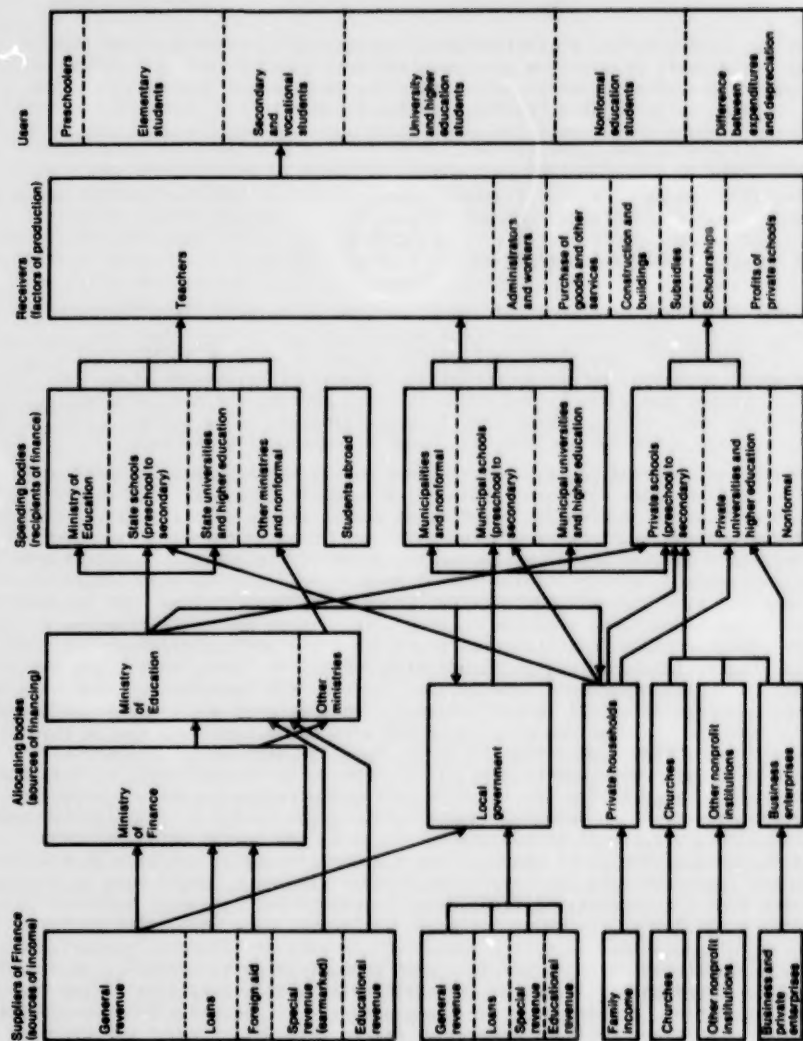


Figure 2. Financial flows in the educational system.

The starting point was to record references relating to available research findings on educational financing. The search was initially carried out in Toronto and in Santiago. An ERIC (Educational Resources Information Center) bibliography was obtained and theses and articles in selected journals dealing with financing in developing countries were identified in Toronto. In Santiago, the RAE (Resúmenes Analíticos en Educación) system was used to prepare a first list of references. Local libraries including those of the United Nations regional centres like ECLA (Economic Commission for Latin America), Unesco, and PREALC (Programa Regional del Empleo para América Latina y el Caribe), informal networks like RRAG, ECIEL (Programa de Estudios Conjuntos Sobre Integración Económica Latinoamericana), and IDB (Inter-American Development Bank), participants in "Seminario 80" and similar meetings, and other scholars interested in the topic provided additional sources of references. Later on, computer printouts were received from the IDRC (International Development Research Centre) library in Ottawa and from the Unesco-IBEDOC computer files. Lists of references were also obtained from IIEP (International Institute for Educational Planning), from the German Foundation for International Development Education and Science Library in Bonn, and from the German Overseas Institute in Hamburg.

Of the 1369 references initially identified, 355 were discarded at the preliminary stage and another 363 selected as potential sources were eliminated either because they were provided by only one of the alternative sources or because it was not possible to obtain copies or suitable abstracts for the material; thus, only about half (651) of the initially identified references were finally studied in detail (Table 6) and about 500 used as actual references in this study.

Each reference is identified by a coding combination of up to 10 letters to indicate the source(s) and 1 number for the topics. The letters used for the source(s) are:

- B - obtained from the Education and Science Library in Bonn
- D - selected theses from Dissertation Abstracts International
- E - obtained from Bibliographic Retrieval Services using the ERIC files for a search controlled by "educational finance" and "developing nations" in the (major or minor) descriptors
- H - selected in the catalogues of the Overseas Institute in Hamburg
- I - obtained from the IIEP catalogues and their reference system
- O - identified in Ottawa (IDRC library)
- R - abstracted Latin American papers on educational financing in the RAE
- S - identified in Santiago (national and international libraries) and through informal networks
- T - identified in Toronto (OISE library and reference books)
- U - obtained from the Système de documentation automatique de l'Unesco (CDS) and the IBEDOC data bank.

Table 6. References on educational financing obtained from bibliographies prepared by 10 different sources.

Source	Type of search	Number of references		
		Initially identified	Selected as potential sources	Used as possible references
Bonn	topic	43	36	21
ERIC	computer	148	68	68
Hamburg	topic	188	103	25
IIEP	computer	215	136	81
Ottawa	computer	61	32	6
RAE	uniterm	104	96	96
Santiago	several	215	215	215
Theses	} several	234	234	77
Toronto				
Unesco	computer	161	94	62

The number used in the code identifies the topics: 1, national reports and time series; 2, mechanisms, agencies, models, and laws; 3, unit costs analysis; 4, equity analysis and efficiency indicators; 5, international cooperation and technical assistance; and 6, discussion of issues and other topics (Table 7). If an article dealt with more than one topic, it was classified according to the major topic of the paper, or an arbitrary decision was made.

The references correspond to the 1960-1980 period, but certain "classics" from previous periods have also been included. All abstracts of dissertations completed in North America from 1964-1980 were screened. In fact, most references correspond to the last decade. The bibliography consists of published and unpublished documents. It is categorized by regions - Africa, Asia, Latin America, and the Middle East. Two other categories deal with publications about educational financing in "general" for all types of countries and in "developing countries in general".

If Latin American references obtained in Canada or Europe (126 references coded with letters B, D, E, H, I, O, T, U) are compared to those identified in Santiago (195 references with letters R and S), many of the local publications are not reaching the

Table 7. Bibliography on educational financing obtained from 10 different sources for starting the search process classified by sources, topics and regions.

Region and source	National reports and time series	Mechanisms, agencies, models, and laws	Unit costs analysis	Equity analysis and efficiency indicators	International cooperation and technical assistance	Discussion of issues and other topics
GENERAL						
I	-	2	5	3	-	8
O	-	1	-	-	1	2
S	1	16	5	9	-	27
T	1	1	2	-	-	4
I-S	-	1	-	-	-	-
I-U	-	1	-	-	-	-
T-E	-	1	-	-	-	1
T-S	-	1	-	1	-	-
DEVELOPING COUNTRIES (GENERAL)						
B	1	-	4	1	-	3
E	-	-	-	-	6	-
I	2	-	3	3	1	3
O	-	1	-	2	-	5
S	1	1	9	5	7	17
T	6	2	2	7	3	14
U	6	1	1	-	-	4
E-S	-	-	-	-	-	1
I-S	1	-	-	-	-	-
I-T	-	-	1	-	-	-
I-U	1	-	2	1	1	3
O-T	-	-	1	-	-	-
T-D	-	-	-	2	-	-
T-E	2	-	3	1	2	3
T-S	-	-	-	1	-	-
I-E-U	-	-	-	1	-	-
R-S-I	-	-	-	-	-	1
T-E-B	-	-	3	-	-	1
T-E-H	-	1	-	-	-	-
T-E-S	1	-	-	-	-	1
T-E-I-S	-	-	-	-	-	1
T-E-I-U-B-H	-	-	-	-	-	1

Table 7 continued.

Region and source	National reports and time series	Mechanisms, agencies, models, and laws	Unit costs analysis	Equity analysis and efficiency indicators	International cooperation and technical assistance	Discussion of issues and other topics
AFRICA						
B	3	-	-	-	-	-
E	2	-	-	-	1	-
H	7	3	2	3	1	5
I	1	-	4	1	-	4
O	1	-	-	-	2	1
S	1	-	-	1	-	-
T	12	5	-	4	-	4
U	2	3	1	-	-	1
B-H	2	-	-	-	-	-
I-U	5	2	6	-	-	1
T-B	2	-	-	1	-	-
T-D	2	6	3	1	-	1
T-E	2	2	-	-	-	-
T-H	2	-	-	-	-	-
I-U-B	-	1	-	-	-	-
I-U-H	-	-	-	-	-	1
T-D-S	-	-	-	1	-	-
T-E-I	-	1	-	-	-	-
T-I-U	1	-	-	-	-	-
I-U-B-H	1	-	-	-	-	-
T-B-H-S	1	-	-	-	-	-
I-U-B-H-S	1	-	-	-	-	-
T-E-I-U-B-H-S	1	-	-	-	-	-
ASIA						
B	-	-	-	-	-	1
H	2	-	2	4	1	4
I	4	7	9	3	-	4
O	-	-	1	-	-	2
S	1	-	1	1	-	3
T	15	3	3	4	-	4
U	6	1	-	-	-	2
B-H	1	-	-	-	-	-
I-U	2	-	5	-	-	-
T-B	-	-	-	-	-	1
T-D	2	2	-	3	-	-
T-E	4	1	-	-	-	-
T-H	2	-	-	-	-	1
T-I	-	-	1	-	-	-
T-E-I	1	-	-	-	-	-
T-E-U	1	-	-	-	-	-
T-I-H	-	1	-	-	-	-
T-E-I-U	1	-	-	-	-	-
T-I-U-B	1	-	-	-	-	-
LATIN AMERICA						
B	1	-	-	-	1	-
E	2	-	-	-	1	-
H	7	1	4	10	-	5
I	7	3	2	-	-	1
O	-	-	4	-	2	1
R	27	12	27	14	2	5

Table 7 concluded.

Region and source	National reports and time series	Mechanisms, agencies, models, and laws	Unit costs analysis	Equity analysis and efficiency indicators	International cooperation and technical assistance	Discussion of issues and other topics
S	28	10	9	14	6	22
T	8	6	1	1	-	3
U	7	1	6	-	-	2
I-H	-	-	1	-	-	-
I-U	3	1	4	-	-	-
R-H	1	-	-	-	-	-
R-I	-	-	-	1	-	-
R-O	1	-	1	-	-	-
R-S	-	-	1	5	-	-
R-U	-	-	1	-	-	-
T-D	1	-	1	1	-	3
T-E	1	-	-	-	-	-
T-H	-	-	-	1	-	-
T-S	-	-	-	-	-	1
R-I-H	1	-	-	-	-	-
R-I-U	1	-	-	-	-	-
R-O-H	1	-	-	-	-	-
T-E-S	-	-	-	1	-	-
T-U-B	1	-	-	-	-	-
T-I-H-B	1	1	-	-	-	-
T-R-H-S	1	-	-	-	-	-
T-E-R-B-S	-	-	-	1	-	-
T-E-U-B-H	-	-	1	-	-	-
T-E-R-O-I-B-S	-	1	-	-	-	-

MIDDLE EAST

H	6	1	1	2	-	4
I	-	-	4	-	-	1
O	1	-	-	-	-	-
T	5	-	1	1	-	1
I-U	3	-	1	-	-	-
T-D	1	1	-	-	-	-
T-E	-	1	-	1	-	-
U-H	1	-	-	-	-	-
I-U-H	1	-	-	-	-	-
T-E-U-H	1	-	-	-	-	-

developed world and vice versa; hence, there is a definite need of developing networks for the diffusion of publications in the regions.

RRAG has already experimented with several approaches in preparing comprehensive reviews of research results in selected topics (Mowat 1978; Avalos and Haddad 1979; Schiefelbein and Simmons 1979; Woodhall 1979). This is the first systematic attempt, however, at retrieving research findings from available files in developed and developing countries. This approach can be compared with previous ones and the relative strengths and weaknesses of the topic at hand can be assessed. No further comments on this issue are included in this report.

The basic objective of the study was 2-fold. One was analytical: to examine common educational finance policy issues and to test the conventional wisdom of certain usual proposals. The first sections of the study examined these aspects. The second was mainly descriptive: to summarize available research findings on educational financing to determine existing gaps. The next two sections deal with this aspect.

LESSONS FROM THE STUDY DESIGN

Given the criteria used for selecting and for coding research reports on educational financing, references included in the present study are still limited in number. For instance, several national reports that deal with resources allocated to education and with financial schemes (mainly from the ERIC computer printout) are not identified in the study although they could be used for international comparisons and could suggest relevant financial problems. Other research reports presented as references in the articles initially identified are also not included. Of the almost 100 references in Pandit's report (1976), one third could be added to the references of this study. The search could easily be extended; however, the available material seems to be representative enough.

About one third of the references correspond to the 1960s and almost one third to each of the 1971-1975 and 1976-1980 periods, which suggests that there is a growing interest in educational financing and that more references will probably be reaching the libraries in the 1980s. Most of the references were identified by only one source (80%), 15 by at least four sources, and an IIEP report and a World Bank Staff Paper by seven sources. In the circumstances, all channels should be drawn upon to ensure that research results are suitably covered (at least when using such a wide definition of research). In the long run, donor agencies should give their support to facilitate access to materials available from developed or developing countries.

The Search Process by Region

Because the library search in developed countries was centred on educational financing in developing countries, references on educational financing in developed countries were mainly identified in Santiago (58 out of 94). African, Asian, and Middle Eastern references are practically inaccessible in Santiago (14 out of 279). References on developing countries in general are easier to obtain in developed countries (118) than in Santiago (47); however, there is a similar distribution by topics in both areas. Fewer references for Latin America are available from developed country libraries than from Santiago libraries, so that two thirds of the references were identified in Santiago. Representative material was obtained in developed countries for each topic except "technical assistance".

According to publication dates, there does not appear to be a bias for any special region in the distribution of references identified in developed countries. Research results from all regions flow to the developed world at the same rate. The flow seems to depend, however, on the number of studies published in English. Of the 234 references identified in Toronto, only 7 were in French and 5 in Spanish. This may partially explain why there were fewer references for Latin America (35) than for Africa (54) or Asia (46). Specific interest in a region may also explain the relative number of references in that region. For example, the Hamburg Centre provided almost half of the references for the Middle East.

Main Topics Covered

About half of the references dealt with discussion of issues (189) and national reports and time series (234). They were mainly used in defining the problem of educational financing in developing countries and in discussing some of the usual proposals. Of the 189 references on issues, 100 examined the problems in general for both developed and developing countries.

Mechanisms are studied in all types of countries in general (24 entries) or in each of the regions (77), but scarcely in developing countries in general (6).

Documents dealing with equity analysis and efficiency indicators are relatively new. About 10-15% of the references correspond to this category in each one of the

regions. If most of the material prepared on this topic reaches the publication stage, many cost studies still remain as drafts or circulate as mimeographed reports.

Of the references on international cooperation and technical assistance, only 10 were identified in developed countries for specific regions and 13 others for developing countries in general. More reports on this topic may be required from local sources. The search in Santiago provided 8 documents for Latin America and 7 for developing countries.

It is not possible to identify the professional training of most authors: economists seem more concerned with equity analysis and efficiency indicators, whereas sociologists, administrators, and educators seem mainly interested in the discussion of issues and the analysis of mechanisms. Most national reports result from teamwork at the planning offices or from missions reporting to international organizations.

There are no precise borderlines among financial topics or between them and other aspects of the educational system. Additional topics such as improvements in internal efficiency, educational technology, educational admissions, equality of opportunities, or effects of deprivation or early stimulation (i.e., Sesame Street) could have been covered in the present study.

Research Trends in Educational Financing

Educational financing played a key role in the UNESCO-sponsored regional meetings of the Ministries of Education held in the early 1960s. In 1962, an agreement was reached in Latin America to raise to 4% the proportion of GNP allocated to education. African countries reached a similar agreement in Addis Ababa and the Asian countries in Tokyo. Reports discussed at those meetings presented data on recurrent expenditures by sectors (public and private); sources (federal, regional, and local); levels (primary, secondary, and higher); and types (salaries, general expenses, student aid, and facilities). Unit costs per student or inhabitant and comparisons with GNP and total public budget provided a basis for analysis - mainly deviations relating to regional averages and changes over time. Comparisons of unit costs per level gave clear indication of higher costs per university student (Escondrillas 1966:25).

The poor quality of basic data was discussed at a regional seminar held in Latin America in 1966. Through its educational plans, the Alliance for Progress may have promoted the gathering of higher quality data. At that time, discussions were centred on improving statistics on education and costs (Hallak 1966; Higgins 1966; Lourié 1966; Lyons 1979), and efforts focused on developing suitable methods for gathering data on educational financing (Edding 1967). Other important issues then were expanding educational facilities; controlling disbursements and implementing a PPBS in the public education sector; funding by foreign agencies; and reevaluating free university tuition (Schiefelbein 1978). No additional research findings are available, however, to support proposals for change.

Economists involved in computing rates of return generated a new interest in unit costs. In their theses, Carnoy (1964) and Selowsky (1967) presented the rates of return by educational level for Mexico and for Chile, respectively. Nearly all Latin American countries now have such rates, as do many other countries in the world (Psacharopoulos 1973; 1980).

In the early 1960s, the Organization of American States (OAS) supported studies using the manpower approach developed by the Organization for Economic Cooperation and Development (OECD) for the Mediterranean countries and by the mid-1960s several Latin American countries had forecasted their labour requirements. Data on unit costs had to be less aggregated especially at the university level where the costs of medical or engineering careers are 3-5 times higher than those of teaching, social sciences, or law careers.

Although there are studies on economies of scale in developed countries, few are found in the Latin American region - except for the design of buildings

(Bettancourt et al. 1968) - probably because about 90% of expenses are accounted for by teachers and because national figures are used for computing costs. National accounting systems, however, are improving their statistics and compiling tables showing sources and destinations of funds as well as input-output matrices with a special sector for education. Thus, the quality of global figures is improving. Further cost studies at the micro level are being undertaken and researchers can now explain the variations in unit costs. Teacher-student ratios, seniority (reflected in higher salaries), and other expenses such as depreciation and use of capital related to buildings and sites are under consideration (Tibi 1980).

Time series on educational funding have also recently been related to casual factors. Zymelman (1976) has related total expenses with its components: unit costs, enrollment rates, and proportion of the population in the school age. Several variables have been regressed to explain each of these three components (Eichert and Orivel 1980). Such studies should provide valuable information for educational policymakers.

Zymelman (1973) has developed indexes to measure educational efforts in relation to "average efforts" in the areas of taxation and educational budget. The index is defined in terms of the average practice of a group of countries. This type of study should be complemented with an analysis of nonbudgetary sources (Haddad 1980). These financial instruments have also been considered in national studies (OECD 1974).

Many studies warn that limits are being reached (Silvert 1970; Jordan and Hanes 1976), but few discuss how the educational share of GNP should be allocated (Chenery and Syrquin 1978). Cross-country regressions show that there are small increments in the proportion of GNP allocated to education when the per capita income increases (Chenery and Syrquin 1978; Eichert and Orivel 1980) and that the tax burden could be easily expanded in Latin America (Rezende 1978). Thus, the research results are inconclusive.

Several simulation or optimizing models have been developed for educational decisions (Bowles 1965; Schiefelbein 1966; 1979). Most of these take into account financial constraints or minimal funding required to meet given educational goals. Other models are only iterative procedures for computing the amount of resources required (Som 1970). Cross-country data are also used to estimate equations for future school demand including as independent variables energy consumption, birth rates, growth rate of urban population, and male participation rates in the labour force (Muñoz 1970; Ratinoff and Jeria 1978).

Recent studies have considered the political implications of educational financing decisions. Studies at the macro level have dealt with the relationships between political regimes and educational financing (Levy 1980). Studies at the micro level have described the allocation procedures, the criteria used in allocating resources, the power levers used by some pressure groups, the types of information fed into the discussions, and the constraints that must be considered in any alternative proposal (McGinn et al. 1980). The new approach is not easily generalized, but it represents knowledge required to participate in a real allocation process and it goes beyond the analysis of different countries' methods of financing education (Noah and Sherman 1979).

Another trend has been to study specific educational branches and nonformal activities. Financing of rural education has been examined from different points of view (Coombs and Ahmed 1974; Sack et al. 1978). Production has been suggested as a new source of financing and the importance of external assistance in many successful rural education projects has been recalled. Comparisons have been established between unit costs and benefits in formal and nonformal vocational education (Drouet 1968; Castro 1971; 1973; 1979; Kugler and Reyes 1978). Lifelong education has been developing new mechanisms and available research (mainly in developed countries) could provide some suggestions for other types of education (CERI 1975; Kurkland 1980). The mounting pressure for pre-school education (as a means of increasing equity) has also triggered research on unit costs at that level. Private school financing has been examined at several meetings dealing with rising costs (Muñoz and Hernández 1976).

Data from expenses-per-student studies are now yielding more accurate estimates of

costs. Applying unit costs instead of cash flows provides information on the use of resources. Costs have been related to possible sources of variation: pupil-teacher ratios, percentage of qualified teachers, average annual teacher salaries, and other similar factors (Debeauvais 1980). Better quality data on student costs and preliminary research on educational production functions have led to studies on the efficiency of innovations (CEMIE 1974; Farrell and Schiefelbein 1974; Leslie and Jamison 1976; Schiefelbein 1978).

Funding of educational research has not been widely discussed at the policymaking level (Welsh 1972; Schiefelbein 1978). The possibility of reducing costs through innovations and the recent attention given to the processes through which research may be used for decision-making may generate future support for applied research of this type.

The discussion on channels that should be used for the allocation of funds is quite old; however, mechanisms are reassessed periodically given new social contexts. Loans systems have been evaluated in terms of their social impact, student debt ceilings, and the capital required under a set of macro-economic constraints (Dominguez 1973). Reports on the proportion of defaults have not circulated widely, but some information on the administration of loans is available. The assessment of the Colombian case has provided interesting facts on the use of loans to achieve conflicting goals, on the socioeconomic status of students receiving loans, and on the impact of total educational resources (Jallade 1974).

Pay-as-you-earn systems have been analyzed in conjunction with contingent loans for higher education (Ford Foundation 1972). Vouchers have been suggested as one alternative for channeling funds. In practice, case studies have upheld such alternatives (Boeninger 1978; Noah and Sherman 1979). The variety of educational financing arrangements in existence supports the conviction that financing can adapt in differing ways to the social goals of a particular country.

Attention has recently been focusing on the family's contribution to the education of its members. Studies have considered direct contributions as well as expenses relating to school attendance and foregone income (Brodersohn 1978; Tanzi 1978). Estimates have been computed (Musgrove 1976) and tax deductions have also been explored (Tanzi 1978). Certain studies have dealt with the moral and legal aspects of funding alternatives (Corta 1964; Portela 1979). No additional research findings are available on the household decision-making process to invest in its members' education.

Welfare economics have also been discussed but only in terms of principles (Dorfman 1967). Such theoretical research seems to be exhausted and leads to quite different policy alternatives. Since the United States Supreme Court applied the concept of quality in public education to intrastate school district funding inequities in 1971, developing countries have become interested in the issue of equality (Haddad 1980). The problem remains that more funds are required for compensatory education (Welsh 1972).

Several studies have been carried out on the distributive effects of educational expenses (Jallade 1974; Clavel and Schiefelbein 1976; Fields 1975; 1980). In all cases, middle income groups seem to be benefiting from free-tuition public systems, especially in the higher educational levels. Identifying the problem does not necessarily solve it, however. Rate-of-return studies all point in the same direction - more primary education, but sensitivity analysis of such computations may provide quite different results (Castro 1974) and, if the effects of other variables are deducted, the rates may become lower than the market levels (Simmons 1974).

Studies on the effects of subsidies (or any other specific allocation policy) on enrollments or achievement are needed. More careful analyses of costs in higher education, considering research expenditures in an isolated way, are also required. Detailed monitoring of the use of resources may be one of the most illuminating types of studies for future decision-makers.

LESSONS FROM THE RESEARCH RESULTS

Available research (as previously defined) may suggest what is to be expected of certain actions or what encourages radical viewpoints; both can be encompassed in a real decision-making process. The latter explains why country-specific reports that have no generalizable value in themselves but provide useful comparisons with other countries have been included in the present study.

Because there are no studies on sweeping changes in financial systems and only a few evaluations of new financial policies, there are no reports on values and states of critical actors in financial decision-making processes, nor are there simulation models or analyses of dispositions and abilities of executing groups (McGinn 1980:375). Therefore, all reports may be classified as related to the "pre-planning" or "getting ready for change" stage of organizational innovation (Dave 1979:3).

Findings will be related to each component of the educational system and, for each one, an attempt will be made to identify research aimed at detection (assessment of the current state of affairs in some evaluative sense) or analysis (why current performance is or is not adequate). There are no results on what actions are required to reach specified objectives, nor are there assessments of the competency of executing agencies or of training needs. The absence of legal reports in this study may result from deficiencies in the study design.

Appraisal of the Environmental Setting

All available data show increments of public expenditure on education over time. (See Table 1, p. 5.) The portion of GNP allocated to education has been used as a proxy for the value assigned to education by society (Simmons 1973:14; Eicher and Orivel 1980:18; World Bank 1981). It has been suggested that these increments in educational expenditures may have been made to compensate previous underinvestment in human resources; however, there are no means of knowing whether the adjustment process has already reached a satisfactory equilibrium (Chenery and Syrquin 1978:44). If the rates of return to education (in each level and type of education) are in line with other rates of return in the economy, perhaps an equilibrium has been reached.

To evaluate the levels of financing in each case, the portions of GNP and national budget allocated to education have been compared with GNP per capita, unit costs, and other factors. If some cross-country statistical studies have shown no significant relationship between the portion of GNP a nation dedicates to education and GNP per capita (Zymelman 1976), others have found a slight increase in resources allocated to education when GNP per capita increases (Chenery and Syrquin 1978:31, 46, 50).

Comparisons of educational expenditures by level for Latin American countries reveal that the elementary school expenditures as a portion of GNP can be partially explained by GNP variations, but the effect is negative for South America and positive for Central America and the Caribbean. There is no relationship between the portion of GNP allocated to education and the percentage of schoolage children in the total population (Zymelman 1973). In several South American countries, a very high percentage of the primary schoolage population has access to education whereas age brackets corresponding to higher educational levels are not attended to and this may to some degree explain the above contradiction.

Comparisons of relative efforts allocated to each educational level are limited by such definition problems. Data on public educational expenditures as they relate to GNP have shown that the differences are not prominent at the primary level but tend to increase at the higher educational level (Table 8). They also suggest how difficult it is to attempt an optimization of resources allocated in each society.

Table 8. Ratio of public educational expenditures^a to gross national product by educational level and by region, circa 1973.

Region	Educational level		
	Primary	Secondary	Higher
Developing countries			
Asia	1.33	0.93	0.56
Central America and Caribbean	1.52	0.73	0.38
Eastern Africa	2.04	1.13	0.59
Europe, Middle East, and North Africa	1.71	1.54	0.84
South America	1.65	0.99	0.86
Western Africa	1.64	1.20	0.49
Developed countries			
Japan	1.68	1.79	0.71
Sweden	1.30	1.23	0.38
United States	2.86	1.11	1.03
	1.72	2.34	1.91

Adapted from: Zymelman 1976.

a. The data do not include out-of-school education or education provided by the private sector.

The quality of the data has to be taken into account in any analysis. If the percentages are based on budgeted figures, they may increase in certain countries because of external pressures and decrease in other countries because of nonuse. For example, in India, educational expenditures rarely exceeded 60% of the plan allocations (Haque 1970:408). Consequently, improvements in the use of resources allocated to education are more needed than additional resources in some countries.

Evaluation of Resources

It is difficult to gather accurate data on educational financing in any country and even more difficult to do so for cross-cultural comparisons. First, there is uncertainty about the range of activities that should be included as educational expenditures (CERI 1980:99): school meals could be considered as expenses in education, in nutrition, or in both; private training could constitute a sizeable amount in educational funding - in Bolivia, 9% of the urban labor force was at one time in training programs financed mainly by private firms (PREALC 1975:12); pensions paid to retired teachers could be included if there are no social security systems or if deductions are part of total expenditures (Pandit 1976:9). Second, it is necessary to consider the existence of several public agencies that provide learning opportunities for adults in other Ministries, in addition to those of the Ministry of Education (OECD 1977:9). Third, there is the unreliability of the methods used by agencies to record data: there is no accounting for "hidden costs" in nonformal educational programs, such as volunteer labor, free radio time, borrowed facilities, and opportunity costs for trainees (Coombs and Ahmed 1974:177). Fourth, there is the problem of unscrambling joint costs for joint products or the parallel problem of isolating the influence of noneducational factors (for example, the Green Revolution) on the productivity of educational inputs. Fifth, there are the difficulties of expressing costs in money of the same value, given the limitations of the price indexes used for deflation.

Fees account for a relatively low proportion of total educational resources in developed countries; yet, at the university level, they can range from nothing in OECD countries to 12% in public and 33% in private American institutions (Woodhall 1978:15, 37). In certain developing countries, the private educational system can require in excess of one third of total resources allocated to education (Muñoz and Hernández 1976; Brodersohn and Sanjurjo 1978:323).

School fees are occasionally collected from parents on the understanding that the money will be used to purchase books and equipment which will in turn be used by their

children; however, the schools sometimes receive only a fraction of what is collected and the balance is allocated to other activities (Heyneman 1980:17). Moreover, the level of fees collected is often standardized by the central government which prohibits parents and local communities from raising the level of educational quality through their own sources of financing (Heyneman 1980:18). This also happens in developed countries that want to avoid creating disparities (Noah and Sherman 1979:44).

In India, the entire mid-day lunch is supplied by the community (Pandit 1969:17) and its value is greater than any of the cost provided by government. In fact, in many cases, the only component of government cost is teachers' salary.

Assuming that measurement problems are not too serious, several studies on the distribution of resources among levels, types, or regions have been carried out. The way in which countries allocate their educational budget among levels bears no relationship to GNP per capita. Countries within the same geographic region do present, however, similar patterns of educational financial variables (Zymelman 1976). According to Simmons (1973:3):

Countries have tended to limit their systematic investment in education to only the formal and nonformal areas. Mass media, political parties and alteration of the family environment have been less frequently used as systematic tools for changing attitudes and behaviour of either the young or the old.

In spite of this conservative trend, many reports deal with the financial goals and objectives of educational systems. Until recently, social science research techniques have not been applied to developing goal statements for use in the educational planning process (McGinn 1980:353). Changes in the financial arrangements of several countries and higher quality financial data should provide comparisons that could be used as indexes for the assessment of each reality.

Making a comparison between planned expenditures (that represent a fraction of total educational expenditures) in the first three Indian 5-year plans and reality, Pandit (1976:11) concluded that "...the bulk (around 60 per cent) of the plan expenditure was spent during the last two years of each plan period. It is seen that the expenditure on plan schemes gained momentum towards the end of each plan." In Chile, the reverse situation was observed in the 1965-1970 plan.

Unit costs can provide an assessment of internal efficiency but they can be defined in multiple ways. The capital cost of a building, for example, may be charged on the basis of the depreciation rate plus the cost (interest) of using the capital, in other words, the replacement of the capital asset plus the use of capital, or the rental value. The allocation of global administrative expenditures (to estimate more realistic costs) is also conventional. Dramatic differences may be observed among regions depending on whether the comparison is made using the class, the student, or the graduate of a specific level as the unit for computing costs. For example, similar costs at the class level may generate higher costs per student if there is under-utilization of physical and human capacities because of a shortage of new students or inability to retain students. If, in addition to the institutional costs, personal or family expenditures are included as well as the amount of foregone salaries (those incomes that could have been obtained if the student were actively trying to get money instead of studying), then unit costs may be quite different from those computed from bookkeeping figures. One item that is usually forgotten in the public school system is the free training and upgrading of teachers: "This item could be capitalized and distributed over all the students taught by the teachers in their life time" (Pandit 1969:17). In cases where the system is stable, this item could be considered as a recurrent expenditure (Pandit 1969:18).

Unit costs can still provide valuable elements for studying the distribution of educational resources. Public expenditure per student has been rising (Fig. 3), but figures have not been adjusted for the dollar inflation and they may represent an actual decline. The patterns of expenditure over time indicate that the differences in unit costs are widening in relation to income (World Bank 1981:68-69). The gap between the poorest and richest countries (Fig. 4), "may suggest that developing

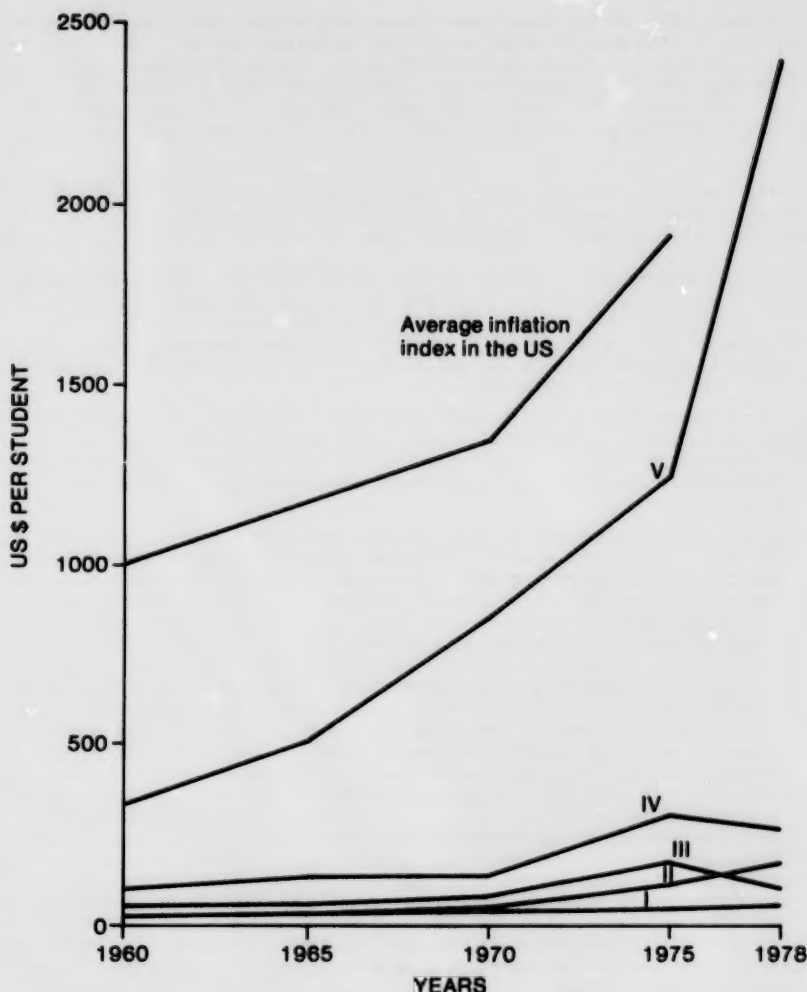


Figure 3. Public expenditure in education per student, 1960-1978. Countries are grouped by gross national product: I. less than \$265; II. \$266-520; III. \$521-1075; IV. \$1076-2500; V. OECD countries. Source: World Bank 1981.

countries have been incurring unit costs that impose an unjustifiable burden on their public finances, especially at the secondary and higher education levels* (World Bank 1981:68). The higher the GNP per capita, the less the differences between unit costs at each level. Unit costs at the university level are 20 times those at the primary level in the poorest countries. The largest difference between poor and rich countries is at the primary level (Fig. 5).

Differences in unit costs among countries may be less marked than differences within countries. The latter can be explained by variances in the teachers' wages at each level, class sizes, and nonwage costs per class (Table 9). Such data are

extremely useful for identifying the main factors affecting unit costs at the micro level: "costs are not really meaningful unless they are related to their corresponding real resources and especially to those used in the learning process" (Tibi 1980:7). Production function studies are useful for identifying resources that can play a key role in the learning process (Schiefelbein and Simmons 1979).

Of course, developing countries are mainly providing education to normal students in densely populated areas with lower unit costs per student. Costs relate to physical characteristics and increase in sparsely populated areas or in areas with extreme climates. In developed countries, providing special education for the physically handicapped or culturally disadvantaged may cause the costs of special instructional equipment and specially-trained teachers and aids to rise significantly. Costs also increase when more education is provided at the secondary and higher levels than at the primary level because more capital intensive education - vocational, technical, medical - is offered at those levels.

Elasticity of substitution between different factors of the production function is very low. Buildings cannot be substituted for teachers, and vice versa, and both account for a very large percentage of total costs. Therefore, although cost studies may help to improve efficiency and to suggest the best way to invest future resources, there are strong constraints on quick changes, especially on teachers' salaries or class size that are determinants of educational expenditures: "a high proportion of costs made up of salaries and wages is intractable. In the remaining expenditure are many fixed charges and there is of course an irreducible minimum for such things as maintenance or for books, stationary or apparatus" (Fisher 1956:357). It is possible to monitor class size or to enforce weekly work schedules, but here too there are limitations to change, especially when there are powerful teachers' unions. There seem to be dynamic elements acting to create new places for teachers, but inertia for supressing places no longer in demand (Tibi 1980:46).

Unfortunately, there are no elements available to assess the combinations of sources of financing. In Kenya, household expenditures in education represent about one third of total resources (Table 10). In Latin America, household expenditures rapidly increase with higher income, with elasticities in the range 1.3-2.3. The increment in these expenditures is related, among other factors, to children attending

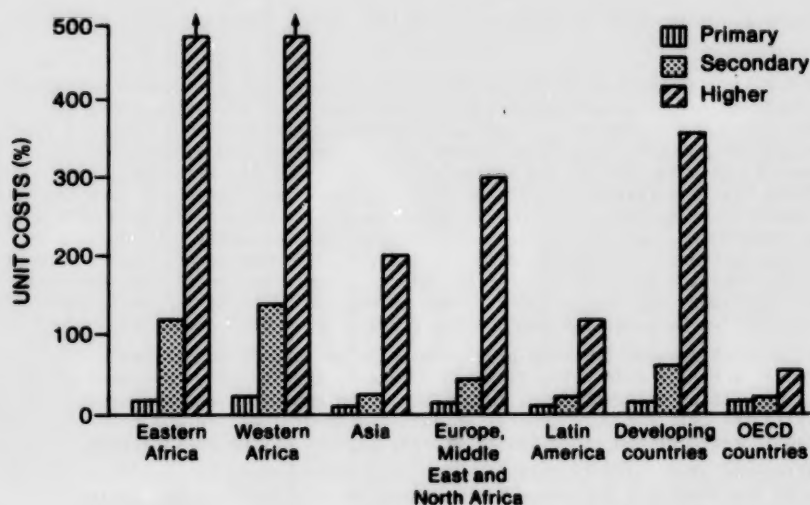


Figure 4. Unit costs as a percentage of gross national product (GNP) per capita, 1970-1973. Source: Zymelman 1976.

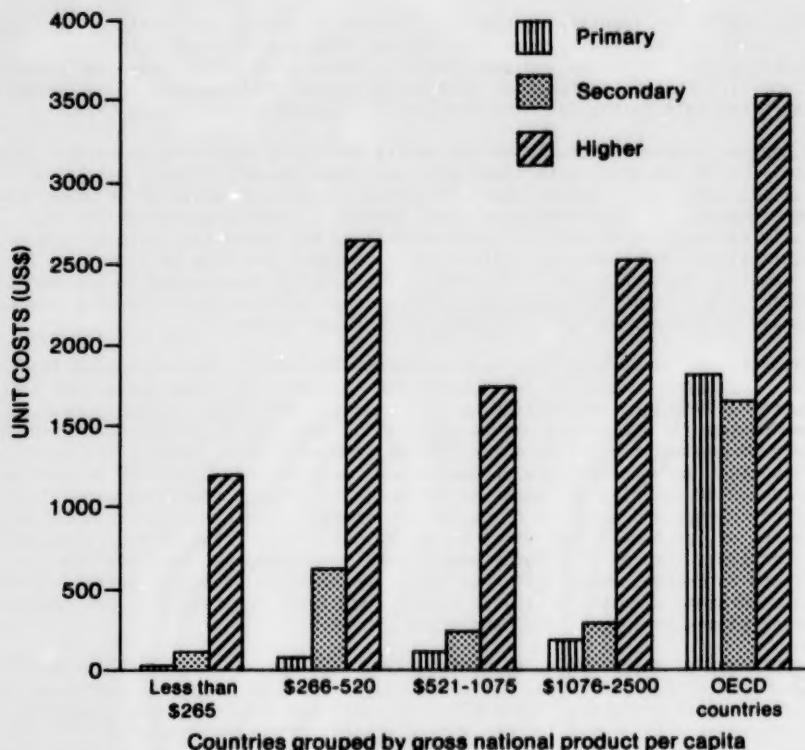


Figure 5. Unit costs by level of education, 1978. Source: World Bank 1981.

private fee-paying schools, to increased buying of other types of nonformal education and to children reaching more expensive (higher) levels of education (Musgrove 1976:62). In summary, the price elasticity of demand seems to be relatively low and the consumption patterns related to income levels (Chenery and Syrquin 1978:52). In the cases of Ethiopia, Kenya, and Tanzania, Fields (1980:286) discovered that: "large proportions (in this case 90 percent or more) of the expenditures are directed to the public educational systems...The public educational systems are financed mainly by the national government...private systems are financed predominantly...by households direct contributions." In addition to the individual expenditures, there is sometimes a community decision to build schools by voluntary contribution of work and local materials (Callaway and Musone 1968; Olembo 1974; Scovill 1975; Ter Weele 1975; Afzal 1979). According to Bengtsson and Schütze (1979:17), in OECD countries:

vocational related training programmes (including paid educational leave) are as a rule being financed either by the industry concerned or by parafiscal or trust funds supplied by both employers and employees, while the cost for more general educational programmes are borne by public revenues and, to a lesser degree, by fees of the participants.

This pattern is also valid in Latin America. It is necessary to understand how these aspects of the financial system work to propose alternative ways of raising new funds for education. All the evidence suggests that it can no longer be assumed that only public funds will support the new tasks being faced by the educational system.

In several developing countries, the educational system depends upon a supply of

Table 9. Primary school characteristics affecting expenditures, in each country's currency.

Primary school characteristics	Indonesia, 1979			Nigeria, 1979			Venezuela, 1976-1977 and 1978-1979		
	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum
Running expenditure per pupil	16.3	1.6	48.5	58.3	29.1	165.6	80.5	57.8	109.6
Teachers' wage as % of running expenditures	83	-	-	94	-	-	74	-	-
Teachers per class	1.2	0.7	2.0	1.2	1.0	1.3	1.1	1.1	1.2
Average teacher's wage	436.6	37.2		1824	1655	2098	1969	1769	2053
Other wage costs per class	40.6	-	75.0	133	26	340	743	467	1017
Nonwage costs per class	68.2	12.5	282.9				25	-	207
Nonwage costs as % of running expenditures	11	-	-	-	-	-	1	-	-
Number of pupils per class	38.7	39.5	26.2	38.7	65.0	36.3	36.6	41.8	25.4

Adapted from: Tibi 1980:46-57.

Table 10. Distribution of total expenditures on public and private education in three East African countries by sources of financing, in each country's currency.

Sources of financing	Ethiopia, 1970-1971			Kenya, 1970-1971			Tanzania, 1970-1971					
	Public	Private	Total %	Public	Private	Total %	Public	Private	Total %			
National resources	93.2	8.9	102.1	72.4	37.9	5.8	43.7	89.7	548.3	16.8	565.1	97.3
Public financing	91.7	0.4	92.0	65.3	30.0	0.0	30.0	61.6	541.8	0.0	541.8	93.3
Household resources	1.3	8.2	9.5	6.7	7.1	5.5	12.7	26.1	6.1	16.8	22.9	3.9
Other private resources	0.2	0.3	0.6	0.4	0.8	0.3	1.0	2.0	0.4	0.0	0.4	0.1
Foreign resources	31.4	7.7	39.0	27.6	4.7	0.3	5.0	10.3	15.6	0.0	15.6	2.7
External loans	4.0	0.0	4.0	2.8	0.1	0.0	0.1	0.2	2.2	0.0	2.2	0.4
External assistance	27.4	7.7	35.0	24.8	4.6	0.3	4.9	10.1	13.4	0.0	13.4	2.3
Total	124.6	16.6	141.1	100.0	42.6	6.1	48.7	100.0	563.9	16.8	580.7	100.0

Adapted from: Ter Weele 1975: Tables 2-8, 3-9, 4-9.

external capital. External aid reached about U.S. \$2.8 billion in 1975, which amounted to 9% of the developing countries' educational budgets. In Senegal and Ethiopia, foreign sources represented up to one third of public expenses in education (Ta Ngoc Chau and Caillods 1976:5; Fields 1980:287; Heyneman 1980:52). The World Bank loans, accounting for 10% of educational aid in 1975 (Fig. 6), are described in Table 11.

There are few studies on the resources provided at the state and local levels and those available tend to detect forces for increasing state activity. If the more elastic sources of revenue (such as income taxes) fall in the fiscal domain and the local sources are rather rigid (with respect to GNP growth), growing activities like education will create a need for transferring funds to the local level (Pandit 1976:17).

In summary, unit costs compiled at the national level are in many cases unreliable because they are computed in terms of budgeted figures rather than actual spending, because other expenditures are not included, and because precise breakdowns by level are not always available. "It therefore seems essential to supplement national data, ...by means of data and analyses gathered at the level of individual schools" (Tibi 1980:2). Assumptions made in the computation of costs must also be kept in mind during the analysis: it can no longer be assumed that the costs per student are the same for all students at a given level irrespective of the type of school. Decisions and suitable working definitions must be spelled out by the analysts. For example, if the costs for training a technician are to be computed, the costs for training another individual below the required standard should or could be considered. The selection of a suitable unit (pupil, graduate, institution, or region) for comparisons must also be carefully made to avoid arriving at misleading conclusions.

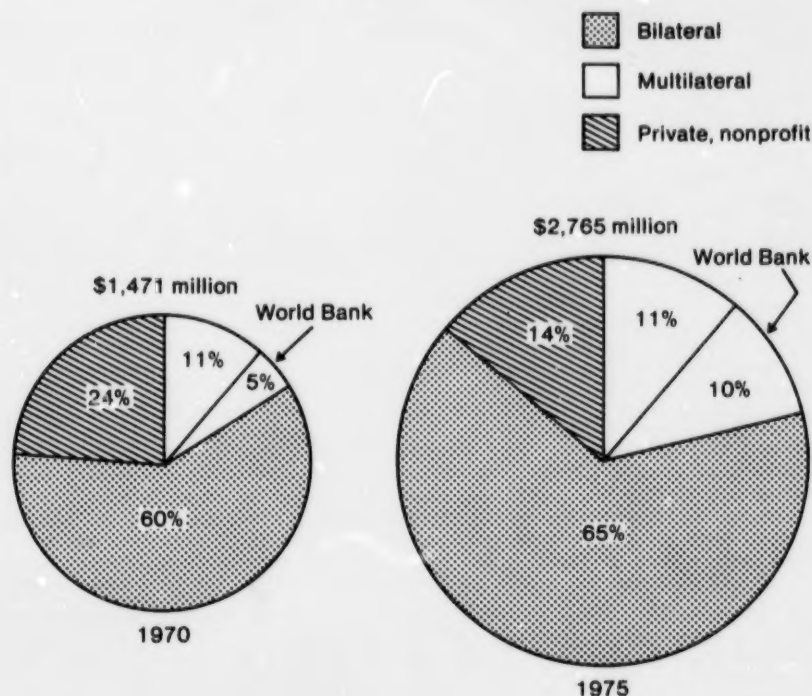


Figure 6. External aid to education (valued at donor costs), for 1970 and 1975. Aid includes grants, gifts, loans, and credits. Source: World Bank 1981:73.

Table 11. Distribution of World Bank and International Development Association (IDA) loans for education by region, in millions of current U.S. dollars for fiscal year.

Region	Annual average 1972-1976	1977	1978	1979	1980	1981	Cumulative lending operations
East Asia and Pacific							
education	57.9	83.0	40.0	164.0	138.0	363.0	1126.6
total	800.3	1475.0	1726.2	2130.0	2368.9	2358.4	17408.4
percentage	7.2	5.6	2.3	7.7	5.8	15.4	6.5
Eastern Africa							
education	37.8	37.3	57.7	26.5	35.1	161.2	612.3
total	412.3	572.2	560.3	645.8	815.0	874.1	7094.1
percentage	9.2	6.5	10.3	4.1	4.3	18.4	8.6
Europe, Middle East and North Africa							
education	62.6	79.5	191.0	188.0	146.0	81.7	1089.9
total	1180.0	1570.1	1855.9	2336.6	2445.7	2435.8	21070.3
percentage	5.3	5.1	10.3	8.1	6.0	3.4	5.2
Latin America and the Caribbean							
education	34.3	59.0	33.7	52.5	32.0	82.0	526.7
total	1045.6	1893.2	2110.1	2264.8	2684.0	3153.2	22648.2
percentage	3.3	3.1	1.6	2.3	1.2	3.8	2.3
South Asia							
education	4.8	15.0	5.7	35.0	40.0	25.0	178.7
total	893.7	1164.2	1648.9	2077.0	2436.5	2531.2	18315.0
percentage	0.5	1.3	0.4	1.7	1.6	1.0	1.0
Western Africa							
education	32.9	14.8	23.8	30.0	49.0	22.4	360.5
total	311.2	392.1	509.3	556.3	731.6	938.3	5666.2
percentage	10.6	3.8	4.7	5.4	6.7	2.4	6.4

Adapted from: World Bank 1981:12, 32, 38, 44, 50, 56, 62, 186, 187.

Evaluation of Financial Processes

The precise role and the mechanisms of the flow of resources for each source of educational financing can be analyzed in terms of unit costs. This type of research generally involves a comparison of performance - as measured by some output indicator - with variables describing process characteristics of the financial system or status characteristics (classificatory) of participants in the process (McGinn 1980:361).

A detailed analysis of the first type of evaluation, that is factors relating to educational achievement in developing countries, has already been prepared for RRAG (Schiefelbein and Simmons 1979). The existence of threshold points for each input has been suggested; beyond such points no further significant improvement is obtained (Simmons 1980:12). This type of analysis has obvious financial implications: it is not necessary to devote more resources to factors that will not generate a significant increment in achievement levels. More experimental research of this type is required to provide more objective results for the decision-maker. A detailed analysis of the effects of class size in a developed country has shown that students in classes of 25 do not learn substantially faster than those in classes of 40 (Smith and Glass 1980). If similar results were available for different subjects in each of the branches and levels of the educational system, the allocation process could be improved. Another type of study that could influence the process of resource allocation considering not only the effects on achievement but other dimensions of the outcomes has been the review of teacher effectiveness research commissioned by RRAG (Avalos and Haddad 1979).

Longitudinal trends are not always those which might normally be expected. In general, schools grow in size and class sizes sometimes increase (Ta Ngoc Chau and Caillods 1976:82); in other cases, class sizes decrease and schools evolve in a pattern that opposes the general trend observed (Tobing and Johnstone 1980:47). Longitudinal studies on unit costs may suggest how administrators adjust to new conditions. Dynamic answers to demand and sluggish responses to attrition of enrollments have been detected through such studies (Tibi 1980:42).

Several statistical studies have considered the costs of educational services in different scales (Tibi 1980:28). In the United States, there were no measurable economies of scale according to community size (Eckstein 1964:50); however, minimum costs were found at enrollments of about 1500-2000. In none of these studies did "the costs (in terms of either inputs or outputs) of operating at non optimal enrollments seem particularly high" (Katzman 1973:376). In England, there was evidence for economies of size in primary schools and in secondary schools when the latter were viewed as complete groups (Hough 1980). School size was the only consistent predictor of examination performance in Ogun State secondary schools (Nigeria) and economies of scale were found in the operation of schools (Oguntoye 1978). School size was a positive factor in 5 out of 10 production function studies on Africa and Asia (Schiefelbein and Simmons 1979:15). Economies of scale were also reported in studies to determine the minimum acceptable size in primary and secondary schools (Bettancourt et al. 1968; Pandit 1969:421). This aspect is usually overlooked by educational planners and should be studied further. In several studies, community size was positively correlated with student achievement. Future studies should pay more attention to fixed and variable costs to estimate cost functions for each interval in the school size scale. The concept of economies of scale may also be used with respect to number of hours of lessons per week, per class, per subject and in total, or teachers' teaching obligations (Tibi 1980:29). Several optimization and simulation models are now available to examine what financial resources are required to meet particular goals in a given time and what goals can be achieved with a given amount of resources (Bowman 1969:667; Pandit 1969:244; Schiefelbein and Davis 1974).

Most educational resources are allocated in previous years: for example, in Mexico, 85% of the educational budget is already committed and half of the balance is almost committed leaving only 5-10% for real decision-making (McGinn et al. 1980). There are no feedback mechanisms to learn from past allocation processes and there is no "memory", even informal, given the high turnover rates in the civil service. A greater degree of local autonomy should be permitted in financial decisions (McGinn et al. 1980:331-353). In general, there is a need to strike "a better balance between the level of attention given to resource allocation practices at macro compared to micro levels of decision-making" (Monk 1981:215).

Dominguez (1973:165, 216, 246) has explored the possibilities of student loans institutions (SLI) in developing countries and concluded that:

The wider the social disparities (reflected in terms of a higher cost of living) and the greater the higher education enrollments, the more economically difficult it is to establish this equalizing institution...Individuals might be burdened to a socially unacceptable level. This might mean, first, offsetting the very social action intended by the SLI; and second, the SLI would unnecessarily risk its own financial future...Absolute subsidies are required when the socioeconomic disparities in the country make the SLI financially unfeasible. Relative (or financial) subsidies are those subsidies implicit in the use of lower-than-market interest rates...To attempt to correct basic socioeconomic discrepancies exclusively through financial credit mechanisms does not seem either viable or equitable. A certain correction subsidy, called absolute subsidy...is necessary to place financial mechanisms within the feasibility threshold.

Discrimination against women, effects of death or migration, failure to repay, or unemployment rates are other real problems and specific solutions must be worked out in each country (Brodersohn and Sanjurjo 1978:448).

External assistance to education in developing countries has gradually expanded during the 1960s and 1970s. According to Coombs (1980:3), new priorities and strategies have been defined for the 1980s:

The first striking change is a major shift of emphasis from expanding higher and second level education capacity...to expanding and improving primary educational opportunities for millions of deprived children (especially girls) in the rural areas and urban slums of developing countries...The second and even more striking shift of emphasis is toward basic education, especially for the many youths and adults who have been bypassed or shortchanged by the formal education system and by the overall development process...A third new emphasis is on helping developing countries to strengthen their basic analytical, informational, planning and management capacities...

Evaluation of Immediate Outcomes

Research supporting evaluation of outcomes is concerned with what has already been done and with what should have been done. Research cannot provide the answer to what should be done: what it does provide is a clearer vision of the value and consequences of alternative courses of action (McGinn 1980:369). As for what has been done: "The measurement of outputs by themselves does not indicate their value to society. To obtain this the measurements must be related to a standard" (Zymelman 1973:210).

The data for measuring outcomes are "individual indicators which reflect specific achievements at the learning process level in the cognitive, psychomotor, and affective areas. Measurements of intelligence, aptitude, attitudes, skill development, and factual knowledge are individual indicators" (Zymelman 1973:210). Classroom and psychological tests can give a measure of the student's happiness. Individual indicators can be combined into a single index, such as years of schooling, but "there are almost no indicators to quantify the attainment of educational goals, although it is theoretically possible to develop measures for punctuality, discipline, acquisitiveness, and social responsibility" (Zymelman 1973:211).

Outputs valued from a social point of view, like cognitive achievement, may turn out "to be of equal or less importance to other behaviour skills the schools have wittingly or not either encouraged or discouraged like discipline and creativity in securing both employment and job promotion" (Simmons 1973:19).

Student failure may even be considered necessary (by some groups), as an instrument for maintaining quality standards, given that certain students will have some personal problems for learning at the proposed levels. Therefore, evaluation of results must include many other dimensions of the educational phenomena.

Very few countries have measures of educational achievement at different points in the educational system and the only measure usually available is scoring in reading, mathematics, or other subjects. "Data for a North African country, however, suggest that six grades of primary education may not be enough to get a high percentage of students to newspaper reading level" (Simmons 1973:20). If data on achievement were available for international comparisons, decisions could be made based on such data.

Negative indicators, such as truancy, dropout rates, vandalism, and student riots, can also be used to gauge the level of the participants' satisfaction in the educational system. In some cases, the indicators may be compared with some social standards. For example, if certain minimum levels of education are considered compulsory (at least for children of normal intelligence), dropout rates may also be used to evaluate outcomes. Beyond such socially defined goals, studies should be carried out in terms of the long range effects. Free provision of food, uniforms, and transportation, or better trained teachers would obviously raise the elementary enrollments but strain resources for secondary and higher education (Blaug 1973:22).

Repetition is another factor that may be used to gauge the allocation of resources. Unfortunately, underestimation of the real levels of repetition in many regions has limited interest in this type of analysis (Unesco 1981). In Latin America, where real repetition rates at the elementary level can reach 50%, there are obvious implications in terms of better use of resources.

Some important by-products of the educational system may be highly valued by society. For example, the custodial function of education may be very important if the percentage of women in the labor force is high. In some cases, cost-benefit analyses of the investment in such custodial function could be carried out "starting from the fact that the existence of crèches permits mothers to choose gainful employment outside the home" (CERI 1980:97-98); however, they should also consider "whether a child more than 5 years of age will lose or gain in earnings, as a result of day care treatment, when he/she is 20 years old" (CERI 1980:98). The differences could be quite high given that the present value of income 15 years ahead is relatively low at 7-8% interest rates.

Studies should consider not only the short term outputs generated by the allocation of financial flows but also the direct impact of educational expenditures on income distribution. Simmons (1973:32) has suggested that "the poor are the first to drop out because they need to work, the first to be pushed out because they fall asleep in class due to malnourishment, and the first to fail their French or English tests because other children have better opportunities at home." Dropout rates could be offset by progressive income tax collection or by enrollments in fee-paying private schools. Specific studies should be carried out in each country to measure the redistributive impact of educational expenses.

There have been extensive debates on the right way to assess regressivity or progressivity of taxes and educational subsidies and the meaning of such analysis. One approach has been to compare the students' background characteristics with those of nonparticipants or students in a different curriculum and another approach has been to use income categories and ask whether the net effects of subsidies to each educational level and of the tax structure appeared regressive or progressive (Bowman and Schiefelbein 1981). Most studies for developing countries have used the second approach. Jallade (1974:69) has suggested that "when each level is examined separately, it appears that only the public financing of primary education has a strong and positive redistributive effect on income". According to Fields (1980:298), "in all cases in which households are ordered by their total income, the proportion of benefits accruing to students from the lower income groups is much smaller than the share of lower income groups in the population". In general, the middle class is subsidized by both the poor and the very rich (Jallade 1974:69; Fields 1975:256; Schiefelbein and Clavel 1976:10). The distribution of higher education subsidies is undeniably perverse from an egalitarian perspective (Bowman and Schiefelbein 1981). In most studies, no distinctions are made among university careers but children of less educated and lower income families tend to be enrolled in the less costly curricula if they reach the higher level at all (Bowman and Schiefelbein 1981). Studies should examine the relationships between the short term distributive impact of

educational expenditures and the long term impact of education measured through life-income streams. The comparison of both types of evaluations is complex and only preliminary studies have been carried out (Bowman and Schiefelbein 1981).

Public services are traditionally used by children of more educated families or children with higher educational levels (Bridge 1978). This finding may reflect, to a considerable extent, a lack of awareness of educational opportunities, although other structural problems can intervene (Simmons 1973; Lourié 1976). If the average educational levels are low in a society, there is a need to close the information gap because segments of the population will acquire the information at a faster rate than other segments and the information gap will further increase (Tichenor et al. 1970).

Teachers' salaries are another direct effect of financial decisions, at least in countries where most education is public. In some cases, teachers' salaries are low enough to discourage good students or to attract only women, given the fringe benefits or the fact that there is less discrimination against women (Morales et al. 1977). As a result of this process, children may have badly trained teachers or female teachers only. On the other hand, in certain recently independent countries, in the case of university professors "it makes little sense to increase greatly the supply of university trained people over the years while maintaining salary structures that were appropriate to the years of shortage" (Foster 1975:392).

Data on factors affecting output have been integrated to data normally manipulated by educational planners in studies to produce policy recommendations that focus mainly on output. Results from such studies must be treated with caution; however, decision-makers have been made to look at old problems from new perspectives because of these studies (Farrell and Schiefelbein 1974:29; Bloom 1979).

Appraisal of Long-range Effects

The long-range goals of an educational system are multiple and, sometimes, contradictory. Attainment of societal goals may be illustrated in terms of five broad objectives: economic, demographic, social, political, and psychological. Measuring the attainment of these goals has been done with many social indicators: production; productivity; birth and death rates; migration rates; turnover in the sales of houses; rate of voter participation; number of books, magazines, and news coverage; crime rates; welfare figures; community health measures; attitudes toward change; attendance at cultural or sports events; newspaper circulation; and church affiliation (Simmons 1973:37-40; Zymelman 1973:211; Pandit 1976:54). However, these measures have been mainly correlated with years of schooling rather than with educational expenditures, with the exception of production and expected life-income streams.

Some of the effects described above are obviously positive. Other activities that result from increased awareness are more difficult to evaluate and education can generate negative effects. Concentration of students may be related with burning of buses, destruction of buildings, or attacks on people. In certain cases, student power has been politically used to achieve partisan ends (of course, some groups consider that a positive activity and others a negative effect). Little research is available on the negative effects of education (Pandit 1976:54).

Economists are specially interested in the long term effects as criteria for decision-makers. Efforts have been made both at the macro and micro levels. At the macro level, several estimates of the effects of aggregate inputs on the variations of national income or aggregate production functions have been established (Bowman 1969:646; 1980:44). According to Zymelman (1973:227; 229):

The total increase of a country's economic output over a given period is only partly explained by increases in the measurable inputs of physical capital and labor. That part of economic growth not attributable to those inputs is called the residual, and is attributed to other inputs...qualitative improvements in the labor force from education, and advances in science and applied technology developed in schools, are probably the most important components of the residual ... research on the "residuals" does not suggest which areas of education will yield the

greatest economic returns and does not measure the relative costs in increasing or improving the inputs that make up the residual.

In most countries, education has played a minor role in growth rates (Table 12). Bowman (1980:55) concluded from her research that education:

...accounted for more than 10 percent of growth in the four countries with the lowest overall growth rates (India excepted)...the cautions against too optimistic a faith in education that these findings must raise are reinforced by the estimates for other countries. Or is this the conclusion we should draw? Do the models distort the entire picture of growth processes and the roles of human development in them?

The distributive and social mobility effects of education have attracted economists but no clear evidence has yet been produced (Eyzaguirre 1973; Muñoz and Lobo 1974).

At the micro level, the economic approach constitutes one element in the application of capital theory to analysis of investment in human beings: the rate of return method. The decision model has just two parts, according to Bowman (1969:649): "(1) the comparison of a man's expected life-income streams (including negative components) in pursuing one course with the stream expected if he were to choose the best alternative to that course and (2) a way of adjusting for the timing of income or earnings so that streams with different shapes through time can be compared with each other." On the other hand, a life-income stream can be transformed into an expected amount of money at a certain point in time based on a determined interest rate that can be compared with the expected costs at the same point in time.

For decision-makers, the method is straight-forward. Salaries and costs have a clear meaning and the only problem is accepting the translations of data from age-income cross-sections obtained from surveys at a given point in time into suitable longitudinal estimates for a particular cohort (Psacharopoulos 1981:745). In fact, many other variables (family background, unemployment rates, mortality rates, sex, and personal characteristics) are also relevant in salary streams over time (Bowman 1969:651; Zymelman 1973:215). At the social level, several problems must also be considered (accuracy of real wages as a measure of productivity, scale and "spill-over" effects, and precision of costs estimates). With respect to costs, it is necessary to estimate the probability of repeating a course (grade or year), thus extending the period of study and increasing the total cost. Taxes must be considered when computations are performed but sales taxes have often not been included, thus introducing large biases in the analysis (Bowman and Schiefelbein 1981).

In conclusion, there are wide divergencies between private and social returns to education. Free education makes private return to the individual larger than social returns. Only recently have attempts been made to estimate rates of return to the state (government investment) as different from that to society as a whole, in order to explore investment criteria in addition to distributional or equity criteria (Bowman and Schiefelbein 1981). Data on private and social rates of return suggest that primary education is the most efficient way of investing funds in education (average social rates of return over 25.0% in developing countries - Table 13). The average rates of return for secondary education also show that the lower levels of education are more efficient relative to the higher levels, especially in developing countries (Psacharopoulos 1979:21). There are, however, more differences at each country level: in half of the countries, secondary education is more efficient; but in the other half, the opposite is true (Blaug 1973:21). Differences by careers or subjects, at the university level, provide cases where rates of return in careers with high social prestige are greater than any other type of education. Social rates of return by subject decline with the level of economic development (Table 14). In most developing countries, rates are well above the 10% frequently used as the opportunity cost of capital: "there should be no concern about whether educational investments are too great until the measured rates of return begin to fall into the range of, say, 5 to 10 per cent" (Simmons 1980:204). Rates of return in developing countries almost double rates of return in developed countries (Table 15): "returns to education in developing countries are higher relative to the corresponding returns in more advanced countries" (Psacharopoulos 1980:80).

Table 12. Education in growth accounting, 1950-1962 unless otherwise specified.

Country	Growth rate	Annual percentage point contributions							Percentage of growth attributed to education ^a
		Total inputs	Output per unit of input	Physical capital	Employment	Health and nutrition	Labor re-allocation	Education ^a	
Argentina	3.2	3.0	0.2	1.43	0.93	0.12	-	0.88	0.53
Belgium	3.2	1.3	1.9	0.41	0.40	0.09	0.20	0.70	0.43
Brazil	5.5	4.1	1.4	1.66	1.83	0.43	-	0.30	0.18
1950-1969	6.0	4.4	1.6	2.00	1.65	-	0.33	0.50	-
Canada	4.8	3.0	1.8	1.20	1.50	-	-	0.45	0.30
Chile	4.2	1.4	2.8	0.32	0.65	0.20	-	0.33	0.20
1950-1964	4.2	1.8	2.4	0.56	0.78	-	-	0.54	12.8
Colombia	4.8	3.4	1.4	1.04	1.66	0.49	-	0.33	0.20
Denmark	3.5	1.9	1.6	0.96	0.70	0.07	0.41	0.23	0.14
Ecuador	4.7	2.5	2.2	1.07	0.92	0.32	-	0.38	0.23
France	4.9	1.3	3.6	0.79	0.07	0.15	0.65	0.47	0.29
Germany	7.3	3.3	4.0	1.41	1.49	0.28	0.77	0.18	0.11
Greece	5.3	3.1	2.2	2.44	0.45	-	-	0.24	0.15
1951-1961	5.7	2.8	2.9	1.55	0.65	-	-	0.55	-
1951-1964	4.3	2.9	1.4	0.95	1.06	0.82	-	0.48	0.29
Honduras	2.2	1.8	0.4	0.76	0.91	-	-	0.13	-
India	6.0	1.8	4.2	0.70	0.42	0.28	1.04	0.65	0.40
1950-1960	8.1	3.5	4.6	1.62	1.14	-	0.67	0.50	0.33
1953-1961	10.1	3.9	6.2	2.72	1.03	-	-	0.23	0.14
1955-1968	9.3	6.8	2.5	2.57	1.09	-	0.62	0.53	0.35
1961-1971	6.0	5.7	0.7	2.82	1.43	0.93	-	0.11	0.05
Mexico	6.0	4.4	1.6	2.81	1.46	-	-	0.41	-
1950-1964	4.7	2.1	2.6	1.04	0.78	0.04	0.21	0.39	0.24
Netherlands	3.5	1.4	2.1	0.89	0.13	0.14	0.54	0.39	0.24
Norway	5.6	2.8	2.8	1.40	0.67	0.57	-	0.23	0.14
Peru	7.7	4.6	3.1	2.04	2.19	0.21	-	0.33	0.19
Venezuela	2.3	1.3	1.0	0.51	0.50	-0.03	0.06	0.47	0.29
United Kingdom	3.3	2.2	1.1	0.83	0.90	0.02	0.25	0.78	0.49
United States									

Adapted from: Bowman 1980.

a. Two estimates are given under education; the first column is without "ability" adjustments, the second column is with adjustments.

Table 13. Returns to education by level and region or country type, in percentages.

		Rate of return by educational level					
		Private			Social		
Country	Survey year	Primary	Secondary	Higher	Primary	Secondary	Higher
Developing							
Africa							
Ethiopia	1972	35.0	22.8	27.4	20.3	18.7	9.7
Ghana	1967	24.5	17.0	37.0	18.0	13.0	16.5
Kenya ^a	1971	28.0	33.0	31.0	21.7	19.2	8.8
Malawi	1978	-	-	-	-	15.1	-
Morocco	1970	-	-	-	50.5	10.0	13.0
Nigeria	1966	30.0	14.0	34.0	23.0	12.8	17.0
Rhodesia	1960	-	-	-	12.4	-	-
Sierra Leone	1971	-	-	-	20.0	22.0	9.5
Uganda	1965	-	-	-	66.0	28.6	12.0
Asia							
India	1960	24.7	19.2	14.3	20.2	16.7	12.7
	1965	17.3	18.8	16.2	13.4	15.5	10.3
Indonesia	1977	25.5	15.6	-	-	-	-
Malaysia	1978	-	32.6	34.5	-	-	-
Philippines	1967	-	-	-	9.3	12.3	10.7
	1971	9.0	6.5	9.5	7.0	6.5	8.5
Singapore	1964	8.5	28.0	12.5	8.0	21.0	11.0
	1966	-	20.0	25.4	6.6	17.6	14.1
South Korea	1967	-	-	-	12.0	9.0	5.0
Taiwan	1972	50.0	12.7	15.8	27.0	12.3	17.7
Thailand	1970	56.0	14.5	14.0	30.5	13.0	11.0
Latin America							
Brazil	1970	-	24.7	13.9	-	23.5	13.1
Chile	1959	-	-	-	24.0	16.9	12.2
	1962	11.3	21.4	38.1	10.7	17.2	14.5
Colombia	1973	15.1	15.4	20.7	-	-	-
Mexico	1963	32.0	23.0	29.0	25.0	17.0	23.0
Venezuela	1957	-	18.0	27.0	82.0	17.0	23.0
Range		9.0-56.0	6.5-33.0	9.5-37.0	6.6-82.0	6.5-28.6	5.0-23.0
Intermediate							
Cyprus	1975	15.0	11.2	14.8	-	-	-
Greece	1964	-	5.0	14.0	-	3.0	8.0
	1977	20.0	6.0	5.5	16.5	5.5	4.5
Israel	1958	27.0	6.9	8.0	16.5	6.9	6.6
Iran	1976	-	21.2	18.5	15.2	17.6	13.6
Puerto Rico	1959	-	38.6	41.1	21.9	27.3	21.9
	1960	-	24.4	23.0	20.9	23.8	16.0
Spain	1971	31.6	10.2	15.5	17.2	8.6	12.8
Turkey	1968	-	24.0	26.0	-	-	8.5
Yugoslavia	1969	7.6	15.3	2.6	9.3	15.4	2.8
Range		7.6-31.6	6.0-38.6	2.6-41.1	9.3-21.9	5.5-27.3	2.8-21.9
Advanced							
Australia	1969	-	14.0	13.9	-	-	-
Belgium	1960	-	21.2	8.7	-	17.1	6.7
	1967	-	-	25.0	-	-	8.6
Canada	1961	-	16.3	19.7	-	11.7	14.0
Denmark	1964	-	-	10.0	-	-	7.8
France	1970	-	13.8	16.7	-	10.1	10.9
Germany	1964	-	-	4.6	-	-	-
Italy	1969	-	17.3	18.3	-	-	-
Japan	1973	-	5.9	8.1	-	4.6	6.4

Table 13 continued.

Country	Survey year	Rate of return by educational level					
		Private			Social		
		Primary	Secondary	Higher	Primary	Secondary	Higher
Netherlands	1961	-	6.0	9.0	-	5.0	6.0
	1965	-	8.5	10.4	-	5.2	5.5
New Zealand	1966	-	20.0	14.7	-	19.4	13.2
Norway	1966	-	7.4	7.7	-	7.2	7.5
Sweden	1967	-	-	10.3	-	10.5	9.2
United Kingdom ^b	1972	-	11.7	9.6	-	3.6	8.2
United States	1959	-	19.5	13.6	-	14.0	9.7
	1969	-	18.8	15.4	-	10.9	10.9
Range		-	5.9-21.2	4.6-19.7	-	3.6-19.4	5.5-14.0

Source: Psacharopoulos (1980:84-86) provided data for Ghana, Nigeria, Uganda, South Korea, Thailand, Chile, Mexico, Venezuela, Israel, Canada, Denmark, Germany, Netherlands, New Zealand, Norway, Sweden, and the United Kingdom (social returns only).

Australia	Blandy and Goldsworthy 1973:9;
Belgium	Muelders 1974:Table II;
Brazil	Jallade 1977:Table 4;
Colombia	Regression based on Fields and Schultz 1977:Table 8A;
Cyprus	Demetriades and Psacharopoulos 1979:Table 9;
Ethiopia	Hoerr 1974:Table 3;
France	Eicher and Lévy-Garboua 1979:Chapter 5;
Greece	Psacharopoulos and Kazamias 1978:Table 19.1;
India	Heyneman 1980:146;
Indonesia	Hallak and Psacharopoulos 1979:13;
Iran	Pourhosseini 1979;
Italy	Based on income data from Bank of Italy 1972:Table 10;
Japan	Umetani 1977:113-114;
Kenya	Private rates based on Fields 1975:Table II;
Malawi	Preliminary estimate based on Heyneman 1980;
Malaysia	Lee 1980;
Morocco	Psacharopoulos 1976:136;
Philippines	ILO 1974:635;
Puerto Rico	Carnoy 1972;
Sierra Leone	Ketkar 1974:Table 5;
Singapore	Clark and Fond 1970;
Spain	Quintas and Sanmartin 1978:Table 1;
Taiwan	Gannicott 1972;
Turkey	Krueger 1972:Table 4;
Yugoslavia	Thomas 1976:Table 3;
United Kingdom	Private rates based on Psacharopoulos and Layard 1979:Table IX;
United States	Carnoy and Marenbach 1975.

a. Social rates refer to 1968.

b. Social rates refer to 1966.

The thesis for allocating more funds to primary education is better supported by nonmonetary benefits (for example, equality of opportunities, social cohesion, and political stability), but even maximization of economic production could be a valid argument (Blaug 1973:22).

Foregone income may have a greater impact at the secondary or higher educational levels; however, in countries like India, even at the age of 9-10, a child becomes an economic asset in terms of his work at home or outside earnings (Pandit 1976:58).

Table 14. Social returns to higher education by subject, in percentages.

Country	Agriculture	Engineering	Sciences	Medicine	Social sciences	Humanities	Economics	Arts	Law
Brazil	5.2	17.3	-	11.9	-	-	16.1	-	17.4
India	-	16.6	-	-	-	12.7 ^d	-	-	-
Iran	13.8	18.2	14.2	-	-	15.3	18.5	-	-
Malaysia	9.8	13.4	-	12.4	-	-	-	-	-
Philippines	3.0 ^a	10.3 ^b	-	-	-	-	10.5 ^c	-	15.0
Belgium	-	-	8.0 ^g	11.5	-	-	9.5	-	6.0
Canada	-	2.0	-	-	-	-	9.0 ^c	-	-
Denmark	-	8.0	-	5.0	-	-	9.0	-	10.0
France	-	-	12.3	-	-	-	16.5	-	16.5
Norway	2.2	8.7	6.2	3.1	-	-	8.9	4.3	10.6
Sweden	-	7.5	-	13.0	-	-	9.0 ^c	-	9.5
United Kingdom ^f	-	11.4	11.0	-	13.0	-	-	13.5	-
Developing countries average	8.0	15.2	14.2	12.2	n.a.	14.0	15.0	n.a.	16.2
Developed countries average	2.2	7.5	9.4	8.2	13.0	n.a.	10.3	8.9	10.5

Source: Psacharopoulos 1979:79.

a. Based on the assumption that the less than 5% rate for agriculture is equal to 3%.

b. Average of civil, chemical, and mechanical engineering.

c. Figure refers to business administration or commercial studies.

d. Figure includes nonengineering first degrees.

e. Data refers to Master's degrees.

f. Data includes marginal rates of return.

g. Figure refers to average of applied and pure science.

Table 15. Returns to education by level and region, in percentages.

Region	N ^a	Private			Social			Rate of return ^b
		Primary	Secondary	Higher	Primary	Secondary	Higher	
Developing								
Africa	(9)	29	22	32	29	17	12	(3) 13.4
Asia	(8)	32	17	19	16	12	11	(5) 12.8
Latin America	(5)	24	20	23	44	17	18	(3) 18.2
Intermediate	(8)	20	17	17	16	14	10	(3) 9.7
Advanced	(14)	c	14	12	c	10	9	(6) 7.7

Adapted from: Psacharopoulos 1980:87-90.

a. N refers to the number of countries in each group.

b. Rate of return is private and is estimated by an earnings function; it refers to the average year of schooling.

c. Data was not computed because there was no control group of illiterates.

Sensitivity analysis has provided a word of caution on rates of return. Different sets of assumptions have transformed a rate of 19.9% for studying in the Brazilian "ginasio" up to 80.5% in the most favourable combination and down to 8.0% in the least favourable (Castro 1974:389; Pandit 1976:52-66; Psacharopoulos 1979:205). There is a tendency to overestimate economic rates of return because the effects of personal abilities obtained before entering school or skills gained in nonschooling activities are not duly controlled. Some data suggest that the benefits need to be discounted up to 50% in developed countries (Simmons 1973:24; Pandit 1976:52), but in developing countries where socioeconomic status and other descriptive variables have less predictive power on earnings (such as Africa), the size of the discount has to be smaller.

Some of the problems in computing rates of return have suggested (as the education production functions do): "that the productivity and effectiveness of future investments in schooling could be highly sensitive to present public policies to reach preschool children in poverty" (Selowsky 1980:3). Malnutrition, lack of sanitation, low levels of psychological stimulation, and other environmental deficits are some factors that affect the performance of poor children and that may be influenced by public policies. Tentative models within which simulation of results to alternative sets of parameter values may be carried out, have been developed by Selowsky. This line of work is important because "future expansion in enrollment in primary schools in developing countries will mainly consist of additional enrollment of children from increasingly poorer segments of the population" (Selowsky 1980:2).

The information gathered on expected earnings may be combined with specific experimentation to estimate probable benefits and costs of a project or proposal. For example, of a group of potential dropouts, half may be given special help and half receive the normal school services. The difference in improvement credited to the special treatment may be valued in terms of the expected earnings from the additional schooling. The average benefit would be obtained by dividing the total value of the net improvement by the number of students treated. This average benefit may be compared with the cost per student, but "it makes no allowance for the human benefits of equipping youths to earn their own way rather than to drift from unemployment insurance to public assistance, possibly from delinquency to jail" (Eckstein 1964:27). These experiments may raise relevant questions on what alternative methods may be adopted, when the intervention is most efficient, or which other aspects should be included in the treatment in addition to schooling. Such studies could help to ensure that reasonable benefits are obtained from investments and that resources are channeled into those programs that promise the highest returns.

The analysis of the effects of educational levels on productivity represents an

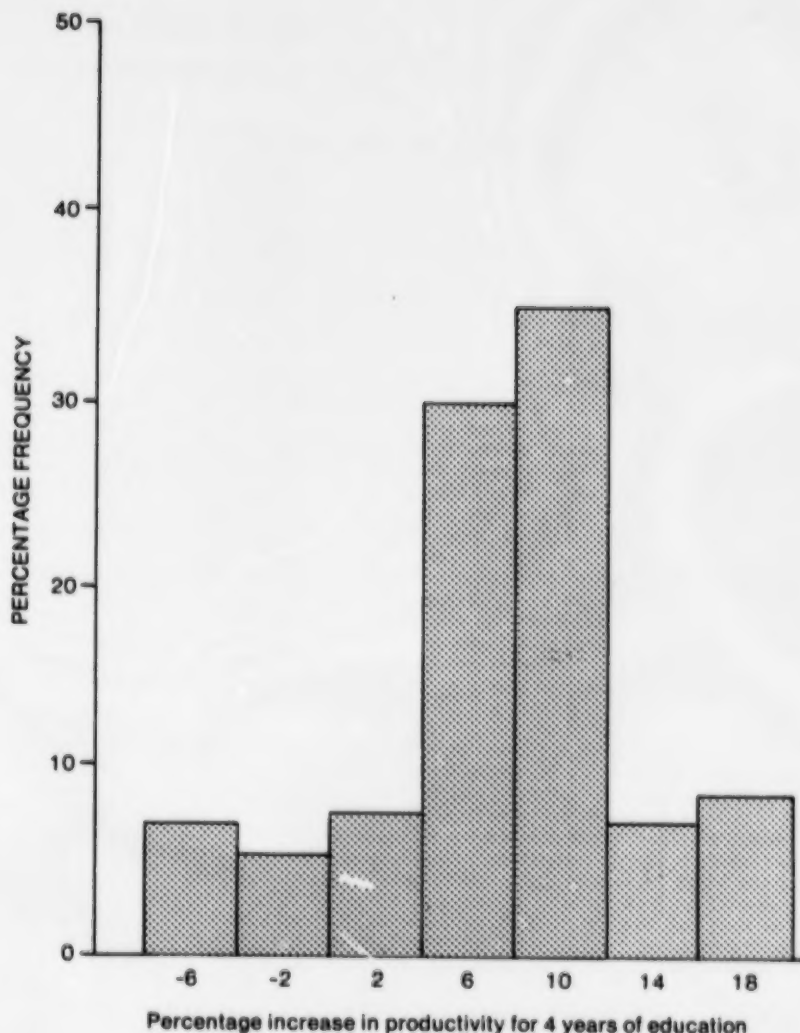


Figure 7. Results of studies relating to agricultural productivity, weighted by the reciprocal of the standard error. Source: Lockheed et al. 1980:130.

alternative approach that (in spite of facing similar problems) is also promising. According to the findings of 31 studies on the effects of a farmer's educational level on his productivity (Fig. 7), the main gain has been about 7.4% with a standard deviation of 6.8% after 4 years of education (4 years were used because it is an often stated minimum for the cycle of basic education). In these studies, the production function for agricultural output replaced the earning function of the rate of return studies. Studies can also be divided according to whether they reflect modernizing of nonmodernizing environments. A data set of 23 studies on the effects of a farmer's educational level on his productivity have been divided into modern and nonmodern subsamples (Fig. 8). The results have shown that: "Under the modernizing conditions

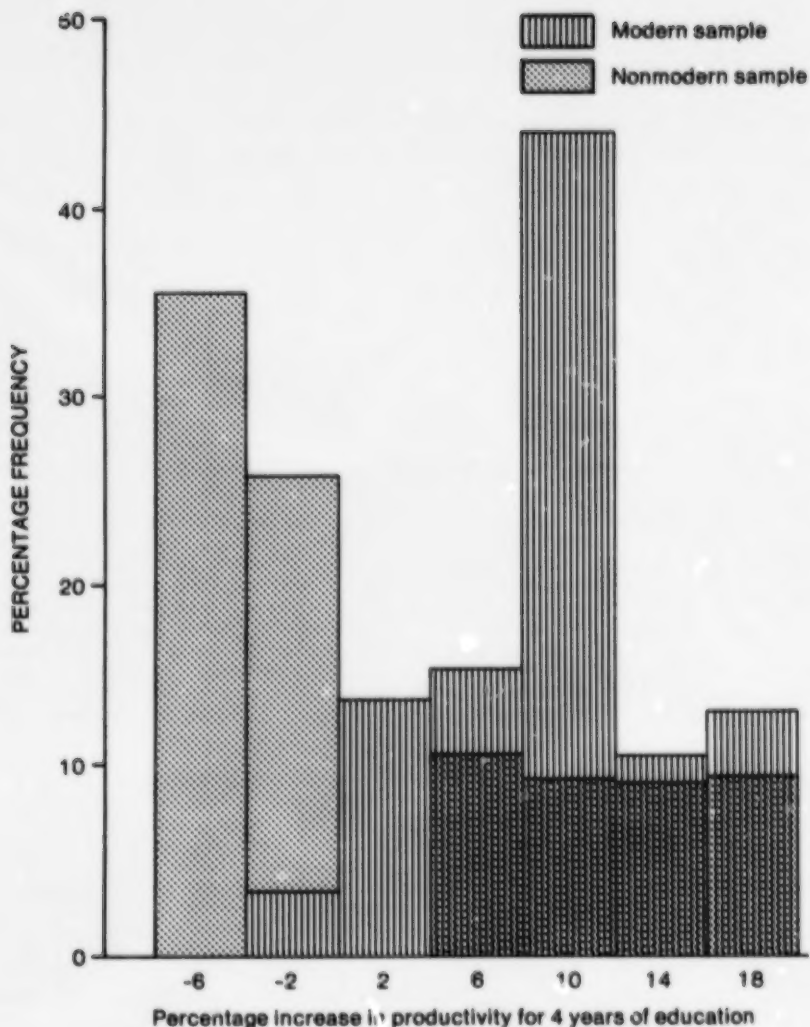


Figure 8. Effects of schooling on agricultural productivity: study results grouped by modern and nonmodern samples, weighted by the reciprocal of the standard error.
Source: Lockheed et al. 1980:132.

the effects of education are substantially greater than under traditional conditions. Over all of the studies, the mean increase in output for four years of education under traditional conditions was 1.3 per cent compared with 9.5 per cent under modern or modernizing conditions" (Lockheed et al. 1980:131). None of the studies dealt with the issue of through which of its outcomes (literacy, numeracy, or modernity) did education affect agricultural output. Such data should provide a basis for cost-benefit analysis, although the criticisms reported for rates of return would still apply.

RESEARCH GAPS AND SUGGESTIONS

The usual distinction between concepts and facts based on social research is extremely important in educational financing. Most policies flow from theories that deal with concepts, but empirical studies initiated in the 1960s may also have generated important impacts in the size of resources allocated to education and, recently, in the levels that should receive priority. In fact, technical and empirical issues of financing and costs become provocatives when discussed in the broad context of the global educational objectives of society.

Most of the available research in developing countries is related to projects which add only to the country's knowledge (the outcome being irrelevant to others unless it is presented in a cross-country comparison), and the data are not accessible to foreigners. In general, research producing findings whose accuracy can be verified by replication by other researchers is produced in developed countries (part of the production being doctoral theses prepared by scholars from developing countries). In developed and developing countries, the learning process is studied from the teaching perspective and the role of the learner is overlooked.

Much of the available research may help to identify problems in the magnitude or type of educational financing and may even suggest possible alternatives but without adequate basis. Most of the statistical research in the social sciences has a limited number of conclusions with many caveats and the results only give some hints for decision-making. Lack of evaluation of changes in financial policies or pilot projects seriously limits the impact on change processes. Table 16 presents a summary of the research evidence discussed above.

On the positive side, there are good descriptions of financial mechanisms with careful discussions of pros and cons, but few attempts to study their impact. More attention should be paid to the implicit assumptions related to those positive or negative aspects of each mechanism in the future to facilitate discussion of their applications in each country. This work should be updated periodically because new mechanisms are being created. For example, in one developing country, resources are now being allocated to universities according to the distribution of the best scores in the entrance examination test. This new tool needs to be studied and compared with other alternatives. Systematic comparative studies describing pros and cons with respect to different scenarios should be of practical use. Trends now observed in Latin America to decentralize decision-making (or even to minimize the role of the central government) are not being evaluated.

In more analytical papers, like those on the rates of return, the authors did not draw conclusions on the transfer of resources from education to other sectors of the economy, or vice versa, but suggested redistribution among different types of education. Although most of them recognized that the goals and rewards of education were not only economic, they suggested that the economic consequences of educational investments should be estimated before making decisions. There are still many aspects not considered in the computation of rates of return studies that may change substantially the figures actually available. In addition, analysis from the point of view of the state is just starting and preliminary results have been presented in recent reports. A whole range of problems related to recovering present investments with future taxations need to be analyzed.

Descriptions of methodologies that developing countries can use and that do not require other sources that may be difficult to obtain, may help to establish similar assumptions, estimation procedures, and sample data. These methodologies should be prepared to facilitate cross-country comparisons. Longitudinal studies should be undertaken to show how the rates of return are changing over time - are they really

"marginal" or do they represent average situations. The finding that in developed countries rates of return are lower than in developing countries should be examined from a longitudinal perspective to verify whether the rates really decline with higher levels of development (taking into account the supply of qualified workers and the rates of unemployment). In any case, it is necessary to assume that all computed rates can change at the end of the time lag required for education to yield its output.

It has been suggested that limits are being reached in the proportion of GNP allocated to education; however, figures (although shaky) show that, in most cases countries, the educational share of GNP can still reach higher proportions than in the past. In some countries, the problem even seems to be the opposite: how to improve the management capacity for using the amount of resources allocated to the Ministry of Education. In other countries, trends in GNP, demands for education, and unit costs suggest that pressures will be reduced in the near future. Analysis on these topics should be country specific because no two countries seem to have the same problems in this area.

There is still no answer to the question of how much a society should spend on education and no consensus on how to estimate the optimum number of places for each type and level of education. In fact, some figures actually suggest that education might be a minor factor in growth (see Table 12), while others suggest that education may have an important role in agriculture productivity (see Fig. 7) or in society in general (see Table 13).

There are many alternative ways to gather and assign resources to education that can fulfill such criteria as efficiency, equity, and flexibility in adapting new technologies or designing new targets for education. There are no unique solutions for all countries and, in most cases, the basis for a rational allocation has to be provided by local research.

Sometimes, the type of research that can help in making decisions on educational financing is very simple. For example, the ratio of higher education unit costs to primary education unit costs provides a simple figure for calculating the opportunity cost of expanding higher education: in Sub-Saharan Africa, 100 pupils could be enrolled in primary education for each pupil enrolled in higher education (Fredriksen 1981:15). The fact that social and private rates of return are so different suggests that the financial structure has created prices that are privately perceived by decision-makers (for example, students and their families) in a way that is different to what the authorities are expecting. The price system can negatively affect social efficiency: excess private demand can frustrate government attempts to supply school places to suit industrial requirements. More studies should consider the ways in which resource allocation decisions made at the macro level affect practices at other levels of the educational system and vice versa. Parallel analysis of financial and real resources cost seem to be specially important in this context. Norms, criteria, and the allocation process must be described and evaluated. This type of research is more subjective and complex. For example, the utilization of teachers may depend on general characteristics of the labour market, subjects making up the curricula, manpower gaps in certain subjects, criteria and procedures in allocating teachers, and behaviour of schoolheads (Tibi 1980:10). Once again, longitudinal studies could provide more relevant insights into the operation of the system. For example, the impact of inflationary situations on the structure of expenditures or in real salaries may be extremely revealing, as well as the behaviour of fixed and variable expenditures. These types of studies could be carried out in 2-3 months by teams of a few specialists and assistants. In addition, the historical analysis of countries that have been able to provide education for all in spite of low per capita income should be of great value for evaluating some existing systems.

Although a fair amount of information and research has been processed, there are still serious gaps. For example, the 1980 report of the World Bank presented figures for 1975 that indicate a 5-year gap in information at the international level. The 1981 updating of those figures included figures for 1977, that is a 4-year gap. Frequently, different sources provide different figures for the same country. International comparisons should be substantially improved. A suitable analysis of such figures could provide a valuable background for local decision-makers.

Table 16. Available research results for decisions on educational financing.

Stages of the planning cycle	Phases of organizational change		
	Getting ready	Aiding change	Consolidating
Detection (How well are we doing now? Which criteria can be used? What should be changed?)	Description of broad social problems in value terms. Who gets what, to what effects. Means and distribution statistics (national and international) are available.	Description of system operation and alternative mechanisms. Distributive effects of educational expenditures. Cost studies.	Some evaluation of internal operation of Ministries to induce compliance.
Analysis (How does the system work? Why performance is or is not good? Which relationship must be affected? What obstacles avoided?)	Use of rate-of-return and cost-benefit analysis (private, social, or state) or regression and manpower studies to mobilize support for change. Sensitivity analysis. Comments on limitations of mechanisms.	Some formative evaluation techniques - short run, low concern for reliability. Evaluation of existing programs in terms of what can be accomplished with them.	Cost-effectiveness analysis.
Decision (What should be done? What are the consequences?)	Results from quasi-experimental design to guess-timate effects of reallocation. Very few pilot programs or experimental designs. Law proposals.	Mathematical and simulation models, PERT and PPBS estimates. DELPHI techniques have not been used. Preparation of norms and instructions (manuals).	Organizational studies about ability to implement new tasks. Attitudinal analysis of dispositions and abilities of executing groups.
Implementation or action (Are resources available? Can the people be trained? Will the system withstand change?)	No published research.	No published research.	No published research.

Source: Text using the framework developed by McGinn 1980:375.

The present study revealed a large amount of detailed information at the country level that could be systematized with relatively reduced resources. Although methods for cross-country comparisons have serious limitations, it is possible to develop models of educational financing for different types of countries or scenarios and different types of targets in terms of equity, quality, diversity, and efficiency.

Some sociologists have suggested that a "New Reformation" of the political state has begun. Many countries are now experimenting with different types of educational systems centred on values such as pluralism, privatism, kinship, localism, and voluntary associations. Financing models should consider such values.

Finally, diffusion of relevant reports should be improved. The search process used in the present study suggests that there are serious limitations in the circulation of reports on educational financing prepared in developing countries. The first step should be to support channels that can incorporate the relevant materials into the mainstream of the international documentation systems.

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STATISTICAL APPENDIX

Table 1. Education.

	No. enrolled in primary as % of age group						No. enrolled in secondary as % of age group		No. enrolled in higher level as % of group aged 20-24		Adult literacy rate (%)	
	Total			Male			Female					
	1960	1978		1960	1978		1960	1978	1960	1977	1960	1976
Low-income countries	76 w	83 w		71 w	92 w		37 w	63 w	14 w	36 w	28 w	51 w
China and India	86 w	87 w		-	-		-	-	-	4 w	-	54 w
Other low-income	46 w	74 w		59 w	89 w		33 w	63 w	6 w	2 w	1 w	27 w
Afghanistan	9	20	15	33	2	6	1	7	-	1	8	12
Bangladesh	47	72	66	103	26	40	8	22	-	3	22	26
Benin	26	60	38	78	15	42	2	12	-	1	8	-
Bhutan	3	12	5	16	-	7	-	1	-	-	-	-
Burma	56	84	61	87	52	81	10	22	-	2	60	67
Burundi	18	21	27	26	9	17	1	3	-	-	14	25
Central African Rep.	32	78	53	101	12	55	1	9	-	1	7	-
Chad	17	35	29	51	4	19	-	3	-	-	6	15
China	102	93	-	-	-	-	-	51	-	1	-	66
Ethiopia	7	38	11	-	3	-	-	9	-	-	-	15
Guinea	30	34	44	46	16	22	2	16	-	-	7	20
Haiti	46	58	50	-	42	-	4	9	-	1	15	-
India	61	79	80	94	40	63	20	28	-	3	28	36
Indonesia	71	94	86	100	58	89	6	22	-	1	39	62
Kampuchea	64	-	82	-	46	-	3	-	-	2	36	-
Lao PDR	25	92	34	99	16	85	1	14	-	-	28	-
Lesotho	83	101	63	82	102	122	3	17	-	-	36	-
Madagascar	52	94	58	100	45	87	4	12	-	-	28	-
Malawi	-	59	-	73	45	51	1	4	-	2	-	52
Mali	10	28	14	36	6	20	1	9	-	-	-	50
Mauritania	8	26	13	34	3	17	1	5	-	1	3	25
Mozambique	48	-	60	-	36	-	2	-	-	-	5	17
Nepal	10	69	19	104	1	31	6	14	-	2	11	19
Niger	5	23	7	29	3	17	-	3	-	-	9	19
Pakistan	30	51	46	69	13	32	11	17	-	2	1	8
Rwanda	49	64	68	68	30	59	2	2	-	1	15	24
Sierra Leone	23	37	30	45	15	30	2	12	-	-	16	-
Somalia	9	44	13	57	5	32	1	4	-	1	7	-
Sri Lanka	95	94	100	98	90	90	27	52	-	1	2	60
Sudan	25	50	35	58	14	42	3	16	-	1	75	85
										2	13	20

Tanzania	25	70	33	80	18	61	2	4	-	-	10	66
Togo	44	102	63	129	24	75	2	25	-	1	10	18
Uganda	49	50	65	58	32	41	3	5	-	1	35	-
Upper Volta	8	17	12	21	5	12	-	2	-	-	2	-
Viet Nam	-	122	-	128	-	116	-	51	-	3	-	87
Zaire	60	90	88	103	32	77	3	19	-	-	31	15
Middle-income countries												
Oil exporters	79	95	85	103	72	94	16	41	4	11	53	72
Oil importers	60	91	71	110	50	91	11	34	3	8	34	64
	87	97	92	100	83	95	19	44	5	13	62	76
Albania	94	-	102	-	86	-	20	-	5	-	-	-
Algeria	46	99	55	114	37	82	8	29	-	4	10	35
Angola	21	-	28	-	13	-	2	-	-	-	5	-
Argentina	98	110	98	110	99	111	23	41	11	29	91	94
Bolivia	64	86	78	96	50	76	12	29	4	13	39	63
Brazil	95	88	97	87	93	88	11	24	2	13	61	76
Cameroon	65	101	87	42	43	91	2	16	-	1	19	-
Chile	109	118	111	118	107	117	24	52	4	13	84	-
Colombia	77	124	77	122	77	127	12	43	2	10	63	-
Congo, People's Rep.	78	156	103	163	53	148	4	69	1	3	16	-
Costa Rica	96	107	97	108	95	107	21	46	5	19	-	90
Cuba	109	122	109	125	109	119	14	51	3	16	-	96
Dominican Rep.	98	96	99	95	98	96	7	28	1	10	65	67
Ecuador	83	108	87	110	79	106	12	46	3	29	68	77
Egypt	66	74	80	88	52	58	16	47	5	14	26	44
El Salvador	80	79	82	80	77	77	13	23	1	8	49	62
Ghana	38	71	52	80	25	61	5	32	-	1	27	-
Greece	102	104	104	104	101	103	37	79	4	19	81	-
Guatemala	45	64	50	68	39	58	7	15	2	5	32	-
Honduras	67	85	68	85	67	84	8	13	1	7	45	60
Hong Kong	87	115	93	116	79	114	20	57	4	10	70	90
Iran	41	101	56	121	27	80	12	44	1	5	16	50
Israel	98	97	99	96	97	97	48	68	10	25	84	-
Ivory Coast	46	71	68	88	24	54	2	14	-	2	5	20
Jamaica	92	98	92	97	93	97	45	58	2	2	82	-
Jordan	77	102	94	103	59	101	25	74	1	7	32	70
Kenya	47	99	64	105	30	94	2	18	-	1	20	45
Korea, Dem. Rep.	-	113	-	115	-	112	-	-	-	-	-	-
Korea, Rep. of	94	111	99	112	89	111	27	74	5	11	71	93
Lebanon	102	96	105	103	99	89	19	46	6	-	-	-
Liberia	31	64	45	80	18	48	2	20	2	-	9	30
Malaysia	96	94	108	95	83	92	19	48	1	4	53	60
Mexico	80	116	82	119	77	114	11	39	3	11	65	82

Table 1 continued.

	No. enrolled in primary as % of age group				No. enrolled in secondary as % of age group		No. enrolled in higher level as % of group aged 20-24		Adult literacy rate (%)	
	Total		Male		Female		1960 1978		1960 1976	
	1960	1978	1960	1978	1960	1978	1960	1978	1960	1976
Mongolia	79	108	79	111	78	105	51	81	-	-
Morocco	47	72	67	90	27	54	5	20	14	28
Nicaragua	66	85	65	83	66	88	7	26	-	90
Nigeria	36	62	46	-	27	-	4	13	15	-
Panama	96	88	98	89	94	86	29	116	7	-
Papua New Guinea	32	60	59	70	7	49	1	13	21	-
Paraguay	98	85	105	87	90	84	11	25	-	29
Peru	83	112	95	116	71	106	15	50	2	8
Philippines	95	105	98	102	93	107	26	56	13	61
Portugal	-	117	-	119	-	115	-	55	4	72
Romania	98	106	101	109	95	103	24	84	11	88
Senegal	27	41	36	50	17	32	3	10	6	70
Singapore	111	109	121	111	101	107	32	57	2	98
South Africa	89	-	94	-	85	-	15	-	9	10
Spain	110	110	106	110	116	110	23	76	3	-
Syrian Arab Rep.	65	89	89	105	39	73	16	50	4	57
Thailand	83	82	88	85	79	78	13	28	22	87
Trinidad and Tobago	88	99	89	98	87	101	24	39	14	58
Tunisia	66	100	88	116	43	83	12	30	5	84
Turkey	75	105	90	115	58	95	14	41	4	93
Uruguay	111	105	111	103	111	108	37	64	1	5
Venezuela	100	106	100	106	100	106	21	38	3	16
Yemen Arab Rep.	8	29	14	50	-	7	-	4	8	60
Yemen, PDR	13	72	20	92	5	51	5	28	21	94
Yugoslavia	111	99	113	100	108	98	58	82	4	82
Zambia	42	98	51	106	34	89	2	16	1	3
Zimbabwe	96	97	107	105	86	90	6	9	2	13
									2	27
									2	77
									2	85
									-	39
									39	-
Industrial market economies										
	114	100	109	102	108	102	68	89	17	99
Australia	103	94	103	94	103	93	51	73	13	99
Austria	105	100	106	100	104	99	50	72	8	100
Belgium	109	102	111	101	108	102	69	86	9	99

Canada	107	101	108	101	105	100	46	89	16	38	-	99
Denmark	103	103	103	102	103	104	65	80	10	32	-	99
Finland	97	85	100	86	95	85	74	89	7	20	99	100
France	144	112	144	113	143	111	46	83	10	26	-	99
Germany, Fed. Rep.	133	90	-	-	-	-	-	94	6	25	-	99
Italy	111	103	112	104	109	103	34	73	7	27	91	98
Ireland	110	104	107	105	112	104	35	92	9	19	-	98
Japan	103	98	103	98	102	98	74	93	10	32	98	99
Netherlands	105	101	105	100	104	102	58	92	13	28	-	99
New Zealand	108	108	110	109	106	108	73	82	13	28	-	99
Norway	100	100	100	100	100	100	57	90	7	24	-	99
Sweden	96	99	95	99	96	99	55	73	9	35	-	99
Switzerland	118	86	118	86	118	87	26	55	7	16	-	99
United Kingdom	92	106	92	105	92	106	66	83	9	19	-	99
United States	118	98	-	-	-	-	86	97	32	56	98	99

Capital-surplus												
oil exporters												
	48 w	97 w	71 w	110 w	25 w	85 w	13 w	45 w	2 w	8 w	14 w	-
Iraq	65	117	94	130	36	103	19	50	2	9	18	-
Kuwait	117	104	131	110	102	98	37	74	-	13	47	60
Libya	59	123	92	128	24	119	9	67	1	7	-	50
Saudi Arabia	12	59	22	74	2	44	2	26	-	7	3	-
Nonmarket Industrial												
economies												
	101 w	97 w	101 w	97 w	101 w	97 w	47 w	71 w	11 w	21 w	97 w	-
Bulgaria	93	96	94	96	92	95	55	90	11	22	91	-
Czechoslovakia	93	94	93	94	93	95	25	40	11	15	95	-
German Dem. Rep.	112	94	111	92	113	95	39	92	16	29	-	-
Hungary	101	97	103	96	100	97	46	69	7	12	97	98
Poland	109	100	110	102	107	99	50	67	9	18	95	98
USSR	100	97	100	97	100	97	49	72	11	22	98	100

Source: The World Bank, 1981:178-179.

Table 2. Averages, standard deviations and dispersion coefficients of public expenditure on education as a percentage of gross national product.

Region (countries) ^a	Averages					Standard deviations					Dispersion coefficients				
	1960	1965	1970	1974	1976	1960	1965	1970	1974	1976	1960	1965	1970	1974	1976
	2.40	3.33	3.77	4.06	4.55	1.13	1.35	1.40	1.46	1.84	0.471	0.405	0.372	0.359	0.403
Africa (42)	2.61	3.41	4.30	4.62	4.54	1.05	1.32	1.96	2.68	2.48	0.402	0.387	0.455	0.580	0.545
America (30)	3.01	3.42	3.62	3.45	4.16	1.98	1.84	1.33	1.56	2.16	0.658	0.538	0.368	0.452	0.519
Asia (27)	3.96	4.96	5.15	5.59	5.87	1.71	1.82	1.98	2.02	1.45	0.432	0.367	0.385	0.360	0.247
Europe (27)															
World (126)	2.92	3.71	4.15	4.34	4.72	1.49	1.71	1.76	2.07	2.10	0.510	0.461	0.423	0.477	0.445

Adapted from: Eicher and Orivel 1980:18.

a. Countries that did not have data for the beginning or the end of the period under study and Oceanian countries for which dispersion coefficients would have been insignificant, given their small number, were not included in the computations.

Table 3. Variations in educational expenditure in relation to gross national product, 1960-1971.

Region	Period			
	1960-1965	1965-1970	1970-1974	1974-1976
Africa	2.30	1.60	1.49	2.81
Africa (OPEC countries excluded)	-	-	1.50	-1.50
Africa -- OPEC countries	-	-	1.49	1.79
Asia	1.45	1.14	1.34	2.12
Asia (OPEC countries and Japan excluded)	-	-	0.55	3.20
Asia -- OPEC countries	-	-	0.78	2.90
Europe and USSR	2.06	0.93	1.63	2.11
Europe -- countries with central planning	-	-	1.51	0.84
Latin America	2.57	1.11	1.22	0.60
North America	2.45	2.26	0.87	-1.62
Oceania	1.73	1.92	2.72	1.20
Developing countries	2.16	1.66	0.92	2.45
Developed countries	2.06	1.33	1.41	1.28
World	2.10	1.36	1.27	1.38

Adapted from: Eicher and Orivel 1980:42.

Table 4. Classification of countries according to efforts made in education (based on educational spending as a percentage of gross national product in 1974).

Countries making small efforts		Countries making average efforts		Countries making large efforts	
Developed	Developing	Developed	Developing	Developed	Developing
Austria	Afghanistan	Australia	Chad	Denmark	Algeria
Czechoslovakia	Angola	Belgium	Chile	Finland	Benin
France	Argentina	Bulgaria	Ecuador	Ireland	Bolivia
Greece	Bangladesh	Canada	Gabon	Israel	Burundi
Italy	Brazil	East Germany	Malawi	Luxembourg	Cameroon
Japan	Burma	Hungary	Nicaragua	Netherlands	Central African Republic
Portugal	Colombia	United Kingdom	Niger	New Zealand	Congo
Spain	Dominican Republic	USSR	Peru	Norway	Costa Rica
Switzerland	Ethiopia		Senegal	Romania	Egypt
United States	Guatemala		Sri Lanka	Sweden	El Salvador
West Germany	Haiti		Syria		Gambia
Yugoslavia	Hong Kong		Turkey		Guinea
	India		Uganda		Guyana
	Indonesia				Honduras
	Iran				Ivory Coast
	Iraq				Jamaica
	Lebanon				Jordan
	Mexico				Kenya
	Mozambique				Lao
	Nepal				Madagascar
	Nigeria				Malawi
	Oman				Mali
	Pakistan				Mauritania
	Paraguay				Morocco
	Philippines				Panama
	Republic of Korea				Rwanda
	Saudi Arabia				Sierra Leone
	Singapore				Somalia
	Thailand				Sudan
	Venezuela				Tanzania
					Togo
					Trinidad and Tobago
					Tunisia
					Zambia

Adapted from: Elcher and Orivel 1980:38.

Table 5. Growth of gross national product (GNP) and of public expenditure on education (PEE) by region.^a

Region	Period				
	1960	1965	1970	1974	1976
Africa					
GNP	63037.4	78777.0	103911.1	130626.3	140120.0
GNP growth rate	-	+ 4.6	+ 5.7	+ 5.9	+ 3.6
PEE	1642.7	2714.1	4195.0	5881.9	7137.7
PEE growth rate	-	+ 10.6	+ 9.1	+ 8.8	+ 10.1
% of PEE related to GNP	2.6	3.4	4.0	4.5	5.1
Africa (OPEC countries excluded)					
GNP	-	-	66122.40	78397.10	75330.00
GNP growth rate	-	-	-	+ 4.34	- 2.01
PEE	-	-	2690.10	3463.20	3676.10
PEE growth rate	-	-	-	+ 6.52	+ 3.02
% of PEE related to GNP	-	-	4.07	4.42	4.88
Africa -- OPEC countries					
GNP	-	-	37788.70	52229.20	64790.00
GNP growth rate	-	-	-	+ 8.42	+ 10.94
PEE	-	-	1504.90	2418.70	3461.60
PEE growth rate	-	-	-	+ 12.59	+ 19.63
% of PEE related to GNP	-	-	3.98	4.63	5.34
Asia					
GNP	312011.1	449935.9	653262.2	917527.8	1028479.20
GNP growth rate	-	+ 7.6	+ 7.7	+ 8.9	+ 5.90
PEE	9832.8	16572.9	25267.1	39593.8	50124.00
PEE growth rate	-	+ 11.0	+ 8.8	+ 11.9	+ 12.50
% of PEE related to GNP	3.2	3.7	3.9	4.3	4.90
Asia (OPEC countries and Japan excluded)					
GNP	-	-	166259.30	256381.80	274498.20
GNP growth rate	-	-	-	+ 11.40	+ 3.50
PEE	-	-	6374.80	8132.50	10052.30
PEE growth rate	-	-	-	+ 6.30	+ 11.20
% of PEE related to GNP	-	-	3.83	3.17	3.66

Asia -- OPEC countries

GNP	-	79281.8	131350.70	180081.00
GNP growth rate	-	-	+ 13.50	+ 17.10
PEE	-	2828.1	4229.80	9482.90
PEE growth rate	-	-	+ 10.60	+ 49.70
% of PEE related to GNP	-	3.57	3.22	5.27

Europe and USSR

GNP	1459052.5	1855603.2	2328045.9	2782206.4	2888236.0
GNP growth rate	-	+ 4.9	+ 4.6	+ 4.6	+ 1.9
PEE	58915.6	95240.9	119864.5	160029.9	173261.8
PEE growth rate	-	+ 10.1	+ 4.3	+ 7.5	+ 4.0
% of PEE related to GNP	4.0	5.1	5.15	5.7	6.0

Europe -- countries with central planning

GNP	-	831562.20	985940.60	106487.60
GNP growth rate	-	-	+ 4.35	+ 3.92
PEE	-	51527.60	66423.30	70891.70
PEE growth rate	-	-	+ 6.55	+ 3.30
% of PEE related to GNP	-	6.20	6.74	6.66

Latin America

GNP	151167.7	193481.4	254669.0	342217.5	368190.0
GNP growth rate	-	+ 5.1	+ 5.6	+ 7.7	+ 3.7
PEE	3149.7	5829.5	7877.5	11269.0	11776.4
PEE growth rate	-	+ 13.1	+ 6.2	+ 9.4	+ 2.2
% of PEE related to GNP	2.1	3.0	3.1	3.3	3.2

North America

GNP	1042148.0	1325475.3	1577622.9	1847774.1	1877400.0
GNP growth rate	-	+ 4.9	+ 3.5	+ 4.0	+ 0.8
PEE	40366.0	71118.8	103826.0	119216.9	116209.0
PEE growth rate	-	+ 12.0	+ 7.9	+ 3.5	- 1.3
% of PEE related to GNP	3.9	5.4	6.6	6.4	6.2

Oceania

GNP	47952.5	64827.9	81811.3	101161.4	112445.7
GNP growth rate	-	+ 6.2	+ 4.8	+ 5.4	+ 5.4
PEE	1408.6	2344.6	3641.5	6312.8	7162.8
PEE growth rate	-	+ 10.7	+ 9.2	+ 14.7	+ 6.5
% of PEE related to GNP	2.9	3.6	4.4	6.2	6.2

Table 5. continued.

Region	Period			
	1960	1965	1970	1976
Developing countries				
GNP	380574.00	485917.00	604121.00	860575.00
GNP growth rate	-	+ 5.00	+ 4.40	+ 9.20
PEE	8930.60	14933.00	21275.40	29513.20
PEE growth rate	-	+ 10.80	+ 7.30	+ 8.50
% of PEE related to GNP	2.35	3.07	3.52	3.43
Developing countries (OPEC countries excluded)				
GNP	-	-	464389.00	639919.00
GNP growth rate	-	-	-	+ 8.20
PEE	-	-	15876.50	21811.00
PEE growth rate	-	-	-	+ 8.20
% of PEE related to GNP	-	-	3.42	3.40
Developed countries				
GNP	2694795.20	3482183.70	4395201.40	5260938.50
GNP growth rate	-	+ 5.30	+ 4.80	+ 4.60
PEE	106384.80	178887.80	243396.20	312791.10
PEE growth rate	-	+ 10.90	+ 6.40	+ 6.50
% of PEE related to GNP	3.95	5.14	5.54	5.95
World				
GNP	3075369.2	3968100.7	4999322.4	6121513.5
GNP growth rate	-	+ 5.2	+ 4.7	+ 5.2
PEE	115315.4	193820.8	264671.6	342304.3
PEE growth rate	-	+ 10.9	+ 6.4	+ 6.6
% of PEE related to GNP	3.7	4.9	5.3	5.6

Adapted from: Eicher and Orivel 1980:70-74.

a. GNP and PEE are in million of US\$ at the 1976 rate. Growth rate is equivalent to the annual growth in percentage.

Table 6. Latin America: Public expenditure on education as percentage of gross national product and of total public expenditures, 1960-1975.

	Public expenditure on education as % of gross national product				Public expenditure on education as % of total public expenditures			
	1960	1965	1970	1975	1960	1965	1970	1975
Argentina	1.9	2.9	1.9	2.7	-	23.4	14.4	18.8 ^c
Bahamas	-	2.2	5.5	5.4 ^b	-	14.8	23.2	22.9 ^b
Barbados	2.9	-	6.2	7.0	-	-	21.2	21.2 ^b
Bolivia	1.6	2.6	5.0	3.5	19.4	24.7	26.1	-
Brazil	2.0	2.4	2.8	3.7	10.5	11.9	10.8	21.1 ^c
Chile	3.9	3.4	5.1	3.7	-	15.1	22.0	12.0
Colombia	1.8	2.3	3.3	3.3 ^b	11.9	13.9	18.9	21.2 ^b
Costa Rica	4.2	4.6	5.2	6.9	29.6	29.0	31.8	-
Dominican Republic	-	2.7 ^a	2.9	-	-	14.5 ^a	15.9	-
Ecuador	2.1	3.1	4.4	-	-	-	23.2	-
El Salvador	2.8	2.8	2.8	3.2	-	21.9	26.2	22.2
Guatemala	1.6	2.0	2.0	1.7 ^b	16.2	22.3	19.5	16.7 ^b
Guyana	3.0	4.4	4.7	8.0	12.1	14.0	16.0	15.2
Haiti	1.4	1.4	0.9	0.7 ^c	-	16.7	11.8	11.2 ^c
Honduras	2.1	2.9	3.2	3.4 ^c	-	27.2	20.3	20.3 ^c
Jamaica	2.5	3.3	3.9	6.0	16.4	16.4	-	16.0
Mexico	1.3	2.4	2.6	4.0	-	8.2	8.5	11.1
Nicaragua	1.5	1.8	2.1	2.3 ^b	15.1	17.4	18.1	15.6 ^c
Panama	3.5	4.1	5.4	5.8	23.6	27.2	24.8	23.9
Paraguay	1.3	1.9 ^a	2.2	1.4 ^c	-	-	15.3	17.2 ^c
Peru	-	5.1	3.8	3.9	-	18.1	20.3	16.6
Trinidad and Tobago	2.8	3.4	3.9	4.3 ^b	14.9	14.1	16.0	18.1 ^b
Uruguay	-	3.7	3.6	-	-	-	26.1	-
Venezuela	2.7	4.0	4.8	5.4	11.7	18.0	22.9	-
Latin America (average)	2.4	3.0	3.7	4.1	16.7	18.4	19.7	17.9

Source: Unesco 1977:527-530.

a. 1966; b. 1973; c. 1974; d. 1976.

Table 7. Latin America: Public expenditure on education, 1965-1975.

As % of all public expenditure	Number of countries		
	1965	1970	1975
Less than 10	1	1	0
10-14	5	3	3
15-19	4	5	6
20-24	3	5	6
25-29	2	1	0

As % of GNP	Number of countries		
	1965	1970	1975
Less than 2	3	2	3
2-3	9	6	2
3-4	2	4	6
4-5	4	2	2
5 or more	0	4	5

Adapted from: Unesco 1977:527-530.

Table 8. Latin America: percentage distribution of public current expenditure by level of education, 1965-1975.

	Primary			Secondary			Higher			Other		
	1965	1970	1975	1965	1970	1975	1965	1970	1975	1965	1970	1975
Argentina	49.8	30.4	27.0	23.9	30.3	40.8	16.9	21.0	30.2	9.4	18.4	2.0
Barbados	-	34.7	27.3	-	33.9	29.7	-	13.0	18.5	-	19.3	24.4
Bolivia	56.4	48.6	64.4	16.3	11.2	13.4	17.9	22.7	5.2	9.4	17.6	17.1
Brazil	-	-	45.5e	-	-	16.9e	-	-	23.6e	-	-	-
Chile	35.7	33.7d	34.9	17.9	14.9c	13.5	25.6	37.9c	25.2	20.8	13.4c	14.0e
Colombia	39.6	36.6	44.2e	13.2	16.9	22.0e	24.5	23.9	10.5e	22.7	22.6	26.5
Costa Rica	60.4	51.2	37.2	16.7	18.9	22.4	11.5	10.5	24.4	11.0	19.4	16.1
Dominican Republic	44.8a	41.1	42.0g	15.6a	21.0	22.9g	25.4a	20.7	22.0g	14.2a	17.2	13.1g
Ecuador	41.3	45.9	-	21.1	41.0	-	32.3	9.9	-	5.3	3.1	-
El Salvador	66.6	57.9	-	9.5	11.8	-	11.6	21.4	-	12.3	8.9	-
Guatemala	56.3b	58.0	53.7g	16.2b	16.9	15.5g	12.3b	13.1	19.9g	15.2b	12.0	10.8g
Guyana	71.4	46.5	44.8	-	34.4	33.3	-	14.7	16.8	12.9	5.3	6.1
Honduras	71.1	64.2	-	15.2	15.4	-	10.3	12.2	-	3.4	8.2	-
Jamaica	49.4	44.7	35.7	27.9	35.6	32.3	9.9	8.8	19.8	12.8	10.8	12.3
Mexico	42.2	50.9	45.2	12.5	27.2	31.1	12.7	10.4	12.6	32.6	11.5	11.2
Nicaragua	60.9	57.9	-	17.3	17.6	-	7.1	10.0	-	14.7	14.4	-
Panama	51.6	38.9	39.1	23.5	18.7	23.5	8.9	10.8	12.6	16.0	31.6	24.6
Paraguay	68.6a	64.8	56.5	16.0a	17.1	15.1	15.0a	16.5	17.9	0.4a	1.7	10.5
Peru	41.8	41.4c	40.0f	18.1	24.0c	21.5f	13.5	15.7c	15.7f	26.6	18.9d	22.8f
Trinidad and Tobago	54.2	52.5	-	24.6	25.9	-	11.4	12.1	-	9.8	9.6	-
Uruguay	44.9	45.1	-	39.8	30.4	-	15.3	19.0	-	0.0	5.5	-
Venezuela	43.2	38.3	22.1	18.2	20.6	18.4	19.7	25.5	37.0	18.9	15.5	22.4
Latin America (average)	52.5	46.8	41.2	18.8	23.0	23.3	15.9	16.7	19.5	13.5	13.6	16.0

Source: Unesco 1977:559-561.

a. 1966; b. 1967; c. 1969; d. 1971; e. 1974; f. 1974; g. 1976.

Table 9. Latin America: expenditure per student in primary, secondary and higher education, selected years^a (US\$ dollars).

	Year	Primary (A)	Secondary		Higher	
			(B)	C = B/A	(B)	C = B/A
Argentina	1974	124.4	273.7	2.2	522.5	4.2
Barbados	1970	90.8	1307.5	14.4	-	-
Bolivia	1970	29.5	53.1	1.8	274.4	9.3
Chile	1969	48.4	145.2	3.0	1524.6	31.5
Colombia	1973	16.3	26.1	1.6	122.3	7.5
Costa Rica	1970	68.9	151.6	2.2	323.8	4.7
Dominican Republic	1970	21.1	73.9	3.5	354.5	16.8
Ecuador	1970	24.8	104.2	4.2	143.8	5.8
El Salvador	1970	30.4	36.5	1.2	595.8	19.6
Guatemala	1970	38.5	77.0	2.0	258.0	6.7
Guyana	1970	34.0	54.4	1.6	1261.4	37.1
Honduras	1970	34.5	82.8	2.4	410.6	11.9
Jamaica	1970	50.0	85.0	1.7	440	8.8
Mexico	1970	29.5	97.4	3.3	241.9	8.2
Nicaragua	1970	35.0	59.5	1.7	185.5	5.3
Panama	1971	78.9	134.1	1.7	394.5	5.0
Paraguay	1970	17.2	34.4	2.0	232.2	13.5
Peru	1971	44.4	84.4	1.9	319.7	7.2
Trinidad and Tobago	1970	61.9	123.8	2.0	1361.8	22.0
Uruguay	1970	102.7	154.1	1.5	811.3	7.9
Venezuela	1970	104.4	219.2	2.1	1252.8	12.0
Latin America (average)	-	-	-	2.8	-	12.3

Source: Unesco 1976:597-599.

a. The nearest year to 1970 for which information was available, is presented.

Table 10. Chile: results of multiple discriminatory analysis (MDA) of survival by socioeconomic analysis.

Variables	Weightings according to MDA	
	Total sample	Socio-economic levels Low High
Average marks in grade 8	.73	.75 .80
Average socioeconomic level of class	.66	.53 .47
Individual socioeconomic level	.58	.41 .25
Quality of teaching	.56	.39 .47
Educational aspirations (class)	.55	.45 .43
Average textbook availability (class)	.53	.38 .35
TV in home (class average)	.47	.30 .26
Individual educational aspirations	.45	.37 .25
Individual textbook availability	.45	.38 .21
Training of academic subject teachers	.45	.29 .34
Total score 8th test (individual)	.44	.33 .41
Total score 8th test (class average)	.31	.15 .25
Standard deviation (class)	.23	.30 .05
Family status academic subject teachers	.18	.06 .13
Consumption level academic subject teachers	.16	.13 .05
Population of locality, grade 8	.18	.03 .03
Taste for academic subjects (individual)	.12	.16 .09
Free reading (individual)	.11	.14 .03
Family value system	.09	.19 .02
Direct encouragement by parents	.05	.12 .01
School size (factor)	.05	.07 .15
Pupil sex	.01	.03 .01
Teaching experience of academic subject teacher	.01	.07 .07
Modernity of community (class)	.01	.04 .07
Standard deviation verbal score	.01	.01 .05

Adapted from: Schiefelbein and Farrell. Nivel y Causas de la deserción en el nivel medio. Revista Educación, 68:1978.

Table 11. Urban Colombia: allocation of taxes and public subsidies for education among income groups.

Income bracket (pesos/year)	Allocation of taxes (millions of pesos)		Public subsidies for education (millions of pesos)		Subsidies as % of taxes		Public subsidies for public education ^a (millions of pesos)		Subsidies as % of taxes	
	Alt. 1	Alt. 2			Alt. 1	Alt. 2			Alt. 1	Alt. 2
0-6000	23	14	71	309	507		73	317	521	
6000-12000	183	119	217	119	182		235	128	197	
12000-18000	438	306	370	84	121		421	96	138	
18000-24000	658	454	530	81	117		596	91	131	
24000-30000	560	392	413	74	105		471	84	120	
30000-36000	548	382	345	63	90		393	72	103	
36000-48000	949	688	477	50	69		661	70	96	
48000-60000	826	590	410	50	69		607	73	103	
60000-72000	675	517	301	45	58		528	78	102	
72000-84000	616	455	163	26	36		358	58	79	
84000-120000	1500	1137	196	13	17		589	39	52	
120000-180000	1405	1897	189	13	10		593	42	31	
180000-240000	1048	1628	62	6	4		287	27	18	
Over 240000	2894	4225	69	2	2		313	11	7	

Source: Jallade 1974:38.

a. The data in this column have been obtained by multiplying total enrollments (public and private) by the subsidy per pupil in the public sector.

Table 12. Rural Colombia: allocation of taxes and public subsidies for education among income groups.

Income bracket (pesos/year)	Allocation of taxes ^a (millions of pesos)	Public subsidies for education (millions of pesos)	Subsidies as % of taxes
0-6000	200	191	96
6000-12000	327	207	63
12000-24000	372	154	41
24000-60000	225	72	32
60000-120000	87	12	14
120000-240000	31	1	3
Over 240000	38	3	8

Source: Jallade 1974:39.

a. In rural Colombia, only the allocation of taxes corresponding to the alternative of minimum progressivity, that is, the alternative which excludes coffee export duties, was used. The reason for doing so is that only a negligible fraction of these duties flow into general revenue; the bulk of them go towards coffee-related activities.

Table 13. Total Colombia: allocation of taxes and public subsidies for education among income groups.

Income bracket (pesos/year)	Number of households (%)	Allocation of taxes (millions of pesos)	Public subsidies for education (millions of pesos)	Subsidies as % of taxes
0-6000	19.0	223	262	117
6000-12000	20.2	510	424	83
12000-24000	24.9	1468	1054	72
24000-60000	22.9	3108	1717	55
60000-120000	8.8	2878	672	23
120000-240000	3.4	2484	252	10
Over 240000	0.8	2932	72	2

Source: Jallade 1974:40.

Table 14. Total Colombia: public subsidies for three levels of education as a proportion of taxes distributed among income groups.

Income bracket (pesos/year)	Number of households (%)	Public subsidies for primary education as % of taxes	Public subsidies for secondary education as % of taxes	Public subsidies for higher education as % of taxes
0-6000	19.0	109	9	0
6000-12000	20.2	77	4	2
12000-24000	24.9	49	18	5
24000-60000	22.9	22	20	14
60000-120000	8.8	4	7	12
120000-240000	3.4	1	3	6
Over 240000	0.8	-	1	1

Source: Jallade 1974:41.

Table 15. Incidence of taxes and distribution by income of students' parents^a.

Income bracket (shillings/year)	% of income taken by indirect taxation alone	% of income taken by all taxes (direct and indirect)	% of tax- payers in that bracket	% of taxes paid by taxpayers in that bracket	Students' parents' income = % of benefits		
					Primary TTCs	Secondary TTCs	University of Nairobi
0-2400	8.7	12.5	90.5	67.9	70.7 (1222)	74.7 (336)	60.2 (138)
2400-3600	7.3	10.9	5.4	8.8	3.8 (66)	4.0 (18)	2.2 (5)
3600-4800	5.4	8.1	1.3	2.2	6.2 (108)	4.9 (22)	2.2 (5)
4800-6000	4.6	7.6	0.7	1.4	5.6 (97)	4.4 (20)	11.8 (27)
6000-8400	4.8	8.2	0.5	1.5	6.2 (107)	4.7 (21)	11.8 (27)
8400-12000	5.9	9.5	0.5	2.4	1.9 (33)	1.8 (8)	2.2 (5)
12000-16800	4.5	8.8	-	-	3.4 (58)	0.9 (4)	-
16800-24000	5.5	9.0	1.1	15.7	0.8 (14)	2.2 (10)	9.6 (22)
Over 24000	4.4	11.9	-	-	1.4 (24)	2.4 (11)	-

Source: Fields 1975:252.

a. Number of students given in parentheses.

Table 16. Public expenditure on primary and higher education per pupil, 1976^a.

Region	Higher education	Elementary education	Ratio of higher to elementary education
East Asia	471	54	8.7
Industrialized	2278	1157	2.0
Latin America and Caribbean	733	91	8.1
Middle East and North Africa	3106	181	17.2
South Asia	117	13	9.0
Sub-Saharan Africa	3819	38	100.5
USSR and Eastern Europe	957	539	1.8

Source: World Bank 1980:Table 5.1.

a. Figures shown are averages (weighted by enrollment) of costs (in 1976 dollars) in the countries in each region for which data were available.

Table 17. The university graduates earnings structure by subject^a.

Country	Agriculture	Engineering	Sciences	Medicine	Social Sciences	Humanities	Economics	Arts	Law
Iran	108	122	94	-	-	82	94	-	-
Malaysia	89	95	83	118	-	-	112d	83	89
Philippines	64	117b	78	-	-	-	95c	86	151
Tanzania	97	108	93	120	-	-	-	112	93
United Kingdom	-	100	93	-	105	-	-	104	-
Zambia	79	87	93	90	104	104	109c	-	137

Adapted from: Psacharopoulos 1979:63.

a-d: a, for all subjects index base = 100; b, average of civil, mechanical, and chemical engineering; c, business administration; d, accountancy.

Table 18. Unemployment rates by educational level.

Country	Illiterates	Primary	Secondary	Higher
Argentina	3.8	4.3	5.7	3.3
Ceylon	7.1	n.a.	11.8	2.3
Colombia	11.5	15.3	14.9	13.2
India	1.2	2.7	7.0	2.8
Iran	10.0	8.1	13.0	2.6
Kenya	21.0	21.0	13.0	17.0
Malaya	10.4	19.5	30.9	15.5
Syria	4.3	n.a.	11.7	4.4
Venezuela	4.3	7.0	10.2	2.3

Source: Psacharopoulos 1975:156.

